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Creator God, Humans, and Artificial Intelligence: Framework to Address Theological and Relational Issues

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CREATOR GOD, HUMANS, AND ARTIFICIAL INTELLIGENCE: FRAMEWORK TO ADDRESS THEOLOGICAL AND RELATIONAL ISSUES

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GLOSSARY

Alien-AI. AI mechanism which is not intended to mirror human intelligence.

Android. In science fiction, a robot with a human appearance.

Artificial Intelligence(AI). An area of computer science that emphasizes the creation of intelligent machines that work and react like humans. Some of the activities computers with artificial intelligence are designed for include: speech recognition, learning, planning, and problem-solving.

Consciousness. The state of being awake and aware of one's surroundings.

Creator God. The creator and ruler of the universe and source of all moral authority; the supreme being.

Cyborgs. A fictional or hypothetical person whose physical abilities are extended beyond usual human limitations by mechanical elements built into the body.

Darwinism. The theory of the evolution of species by natural selection advanced by Charles Darwin.

Divine. Of, from, or like God or a god.

DNA. Deoxyribonucleic acid, a self-replicating material that is present in nearly all living organisms as the main constituent of chromosomes, and is the carrier of genetic information.

Embodied Intelligence. An intelligent agent that has a body.

Embodiment. A tangible or visible form of an idea, quality, or feeling.

Emotional Intelligence. The capacity to be aware of, control, and express one's emotions, and to handle interpersonal relationships judiciously and empathetically.

Emotions. A natural, instinctive state of mind deriving from one's circumstances, mood, or relationships with others.

Ethics. The moral principles that govern a person's behavior or the conducting of an activity. Ethics also refers to the analysis or the evaluation of morality.

Foreknowledge. Awareness of something before it happens or exists.

General or Strong AI. AI designed to successfully perform any intellectual task that a human being can do.

Holiness: the state of being holy.

Immortality. The ability to live forever; eternal life.

Immutability. Not capable of or susceptible to change.

Interiority. The quality of being interior or inward.

Narrow or Weak AI. AI designed to do narrow tasks like facial recognition, driving a car, or speech recognition.

Neuroscience. Any or all of the sciences, such as neurochemistry and experimental psychology, which deal with the structure or function of the nervous system and brain.

Robot. A machine that can replicate specific human movements and functions automatically.

Robotics. The branch of technology that deals with the design, construction, operation, and application of robots.

Solitariness. A person who lives alone or in solitude, or avoids the society of others, possibly for religious motives. Solitary confinement.

Sovereignty. Supreme power or authority. The right to reign over or rule as supreme power or authority.

Techno Sapiens. A new intelligent species resulting from Homo sapiens' integration with technology. Techno sapiens are physically different from previous human groups through the use of technology-assisted genetic and physical modification.

Technological Singularity. The idea that AI will surpass humans in every intellectual and creative dimension, leading to incredible advances.

Transhumanism. Belief or theory that the human race can evolve beyond its current physical and mental limitations, especially utilizing science and technology.

ABSTRACT

Technological advancements are happening at an accelerated phase. Five decades ago, no one even owned a personal computer. A decade ago, smartphones did not exist. Today there are 2.71 billion smartphone users in the world, which is more than thirty-five percent of the world's population. Many developments have happened in the field of Artificial Intelligence (AI), Robotics, and Mixed Reality. AI is the term used to describe a machine's ability to simulate human intelligence. Characteristics once considered unique to humans like learning, logic, reasoning, perception, and creativity are now being replicated by technology and used in every industry. Many movies that show a world ruled by machines have come out, and they have captured the attention of humans and, in some cases, made them concerned about the future of humanity.

Technology affects many people in positive ways, while many others are addicted. There are serious challenges and questions raised by some of the recent technological advancements. As part of this project, a study was conducted to understand the issues raised by AI. The theological implications of these issues were identified. A survey was conducted among Christian students from seven countries to understand how they view God and their faith in the light of the technological innovations and advancements they experience daily. This project utilized open-ended questions in interviews to produce data that were analyzed to show the challenges experienced by pastors and Christians who work in the technology field. Non-Christian IT leaders and

professionals who do work related to AI or who know the AI technology were interviewed to understand how they view these technological developments.

The field research of this project produced some significant findings, and they were analyzed, and the main themes were identified. The project identified a lack of awareness about AI-related issues among Christian leaders. The biblical and theological review was able to establish the basis for addressing the issues with a focus on the attributes of God, the image of God, and human relationality. The literature review provided a solid understanding of AI and the recent developments which Christians must know. This review highlighted some of the main issues with AI and some of the efforts taken to bring policies to regulate AI. The project concluded with the development of a new framework named Action Command Outcome (ACO) Theological framework. The researcher developed this framework as a tool to evaluate different issues raised by AI from a biblical point of view. Some significant issues with AI were analyzed and presented using the tool.

CHAPTER ONE: ARTIFICIAL INTELLIGENCE AND THEOLOGICAL ISSUES

Presenting the Problem

The problem this project addressed is the lack of a theological framework, and especially the absence of a framework highlighting the character of the biblical God, by which to analyze, interpret, and evaluate AI and its implications for human life in a theologically informed manner. In response to this problem, the researcher explored and identified biblical themes of eight attributes of God from the Bible and the relationality between the creator and creation. A study of current literature on the recent development of AI/robotic technology and the responses and concerns raised by Christian organizations or groups in the form of official statements related to AI, theology, and God were analyzed. The researcher collected data through a survey conducted among young Christian students and interviews conducted among pastors and Christian leaders, Christians, and non-Christians working in the technology industry. The researcher then developed a framework that addresses unique characteristics of God as the creator of all creation in comparison to humans as creators in light of technological advancements in AI/robotics.

Delimitation of the Problem

The research was limited to a study of the main attributes of God and the relationship between God and humans, as mentioned in the Bible. The research was also limited to significant developments in the field of AI and robotics during the last twenty-five years. News related to the latest developments in AI are coming out weekly, and the

researcher has tried to include whatever was relevant to this project and available until December 2019.

The research was limited to the impact of technological advancements with a focus on AI on the faith of Christian university students between the age of 18-34 years, and among Christian leaders are affected by the use of technology on an everyday basis. The research was limited to developing a framework to deal with the problem of this project from the biblical worldview.

Researcher Assumptions

This project attempted to address this problem by beginning with several assumptions. The first assumption was that the Bible provides the revelation and details about the attributes of the Creator God and his relationship with humanity. The second assumption was that humans develop AI and are working to make it more technically sophisticated to perform like humans. The third assumption was that technological advancements are happening very fast in the field of AI, and hence, the researcher is not able to address all of the issues. The fourth assumption was that the technological advancements directly or indirectly impact people and can raise doubts regarding their faith in God according to a biblical view when challenged. The fifth assumption was that different religions respond differently to the question of the origin of humanity and to issues where science deviates from religious beliefs. This research was focused primarily on the Christian faith.

Focal Points of the Research

This researcher divided the topic of the project into smaller, researchable focal points called subproblems. The first subproblem addressed by the researcher was to identify the unique attributes of God of the Bible and understand the relationship and

responsibility of the Creator towards creation. The question of how much responsibility the Creator bears when created beings deviate from the original design was considered.

The second subproblem was to understand whether humans can be called the creator of AI and hence god of AI machines and examine specific developments in this field that have theological implications and pose challenges to Christian beliefs.

The third subproblem was to understand whether devices with Artificial Emotional Intelligence can be given a status similar to humans, and can they be held responsible for their actions. Can the decision-making abilities of an AI machine be compared to that of humans? The ethical, moral, and relational issues in the view of the recent development of AI-powered robots, which can function as a religious priest performing rituals, as a life partner fulfilling emotional and physical needs, and as a prostitute in brothels were explored.

The fourth subproblem was to do field research to understand the impact of AI/robotics-related technological developments on young Christians to learn whether AI raises questions about faith and religion, which are not being addressed by the Church from a clear biblical basis. The field research also included Christians and non-Christians working in the technology field and pastors and leaders who have an understanding of AI.

The fifth subproblem was to develop a framework that will help Christians and Church leaders to address the questions raised by AI in a biblical and theologically correct way. Many questions were raised and discussed during this phase. If AI-powered robots can generate messages and deliver them better than a human preacher, does that pose any theological issues? Is the use of AI instead of the inspiration of the Holy Spirit

acceptable? Many of these questions were discussed during interviews to get different perspectives related to the topics which have an impact on Christian faith.

The Setting of the Project

The researcher is a bi-vocational minister with pastoral responsibilities at a church and also works as a Computer Solutions Architect. In a typical week, the researcher preaches and teaches in different settings from the Bible. At work, he is working and researching on the latest innovative technologies like the Internet of Things (IoT), AI, and Cloud computing. The researcher also gives leadership to Inter Collegiate Prayer Fellowship (ICPF) International Missions, a student ministry that operates in eighteen countries. The researcher serves as the Board Secretary overseeing the ministry in seven countries and communicates regularly with staff who work among students and, at times, travels and interacts directly with students. The researcher had conversations about this topic with people with whom he works. The researcher also met with some Christians who work in the technology field to get a better understanding of how they view these issues.

On one side, there is a lot of optimism and excitement, while on the other hand, there is also skepticism, fear, and confusion about AI due to the warnings issued by influential and famous people. Physicist Stephen Hawking said the emergence of AI could be the worst event in the history of our civilization, and computers can, in theory, emulate human knowledge and exceed it. He urged creators of AI to employ best practices and effective management.[1] Like Hawking, Elon Musk has warned about the

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[1] Arjun Karphal, "Stephen Hawking Says AI. Could Be Worst Event in the History of Our Civilization," CNBC, November 3, 2017, accessed August 1, 2019, https://www.cnbc.com/2017/11/06/stephen-hawking-ai-could-be-worst-event-in-civilization.html.

dangers of AI. Speaking at MIT in 2014, he called AI humanity's "biggest existential threat" and compared that to "summoning the demon." Humans are already using AI-powered applications daily, and they are getting better, and their usage is increasing. Since new developments are happening regularly, the researcher kept track of main events to ensure that the most recent advancements were considered for this project.

The Importance of the Project

Importance of the Project to the Researcher

The researcher at his workplace is working on or exploring projects that are AI-related. The researcher has attended conferences that have focused on the latest innovations in AI and have engaged in discussion around ethical issues with experts in this field. Many questions that have come up in the mind of the researcher are addressed in this project. During a discussion around ethics and personal liability of the robots, the responsibility was put on the manufacturer. The self-deciding machines are not held liable for the mistakes they make, but the company who made it is responsible. For example, if a self-driving car faces a situation where it can crash itself or can hit five children and save itself, the algorithm may guide it to run over the children. In this scenario, the maker of the car is held responsible and not the vehicle itself. This issue gets more complicated when the car has self-learning capabilities, and it may have picked up some of the learning from sources other than the car manufacturer. Now, by analogy, if the manufacturer of a self-guiding car is responsible when its algorithm causes the death of a child, is God then responsible when the humans he "created," cause the death of a child?

The researcher has noticed that humans are designing systems that mostly replicate what they are capable of doing. Machines are becoming more efficient in many

things they do when compared to humans. The world chess champion Garry Kasparov and an IBM supercomputer called *Deep Blue* played six-game chess matches. In 1996, Kasparov won the first match played in Philadelphia while he lost the second one played in New York City in 1997. The defeat of Kasparov was the first defeat of a reigning world chess champion by a computer under tournament conditions.[2] This win by Deep Blue was seen as symbolically significant, a sign that AI is improving and catching up to human intelligence, as it defeated one of humanity's great intellectual champions. *AlphaGo* is a computer program that plays the board game *Go*. Alphabet Inc.'s Google DeepMind developed it in London. In October 2015, the original AlphaGo became the first computer Go program to beat a human professional Go player without handicaps on a full-sized 19×19 board.[3] In March 2016, it beat Lee Sedol in a five-game match, the first time a computer Go program has defeated a highly-ranked professional without handicaps. Although it lost to Lee Sedol in the fourth game, Lee resigned in the final game, giving a final score of four games to one in favor of AlphaGo.

In the mind of the researcher, the latest developments have also raised some critical theological questions. These also relate to ethics and raise questions about how humans should set boundaries when it comes to empowering machines. The researcher aimed not only to explore what is happening in the field of technology but planned to reconcile it back to the biblical teachings as to how Christians have to address this issue.

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[2] "Deep Blue," IBM, accessed February 7, 2019, https://www.ibm.com/ibm/history/ibm100/us/en/icons/deepblue/.

[3] "Artificial Intelligence: Google's Alphago Beats Go Master Lee Se-dol," BBC News, March 12, 2016, accessed August 1, 2019, https://www.bbc.com/news/technology-35785875.

Importance of the Project to the Ministry Context

As a pastor of a church that has many members working in the technology field, the researcher encounters many questions related to the topic of this project. The researcher has seen that at times, people are impressed with the technological advancement to the point that they compromise on the biblical mandates without realizing it. This project helped the researcher to address some of the issues on a biblical basis.

A sermon inspired by the Holy Spirit versus one inspired by search engines and social media is a challenge that the researcher has tried to address personally within the ministry context. Should a preacher be more inspired by what he hears and sees in social media? Moreover, what is the need to pray and prepare a message when good sermons are available on the internet? The researcher is well aware that on a Sunday morning, he is standing in front of a crowd who may have heard many sermons preached by their favorite preachers on topics they like to hear. How will the researcher ensure that he is teaching a message inspired by God?

The researcher also works in the leadership team of a student ministry, which operates in seven countries and hence gets opportunities to minister and to talk to young students. At times the researcher can influence the course curriculum and the topics which are addressed by the ministry. This project helped the researcher to develop a framework and gain awareness, which will have a positive impact on the ministry and how it handles the new challenges presented by AI and related technology.

Importance of the Project to the Church at Large

These days many Christians no longer carry a Bible to the church. There are many Bible-related applications, and *YouVersion* application is one among hundreds of applications installed on the phone. The amount of Christian content available and consumed online has increased, and most churches, including the researcher's, publishes the Sunday sermon and the entire service mostly, within a few minutes. The number of people attending church services from home or remote locations is increasing, and more churches are hiring online pastors. An online pastor is a paid fulltime position within the ministry team. A 2015 report by Leadership Network and Hartford Institute found that the use of "online campuses" is rising, with 30 percent of megachurches offering an online campus experience, which includes not only the live streaming of the worship service but also interactive features and online attendee accountability[4]. The day is not far away when the church could have an AI-powered robot preacher. Tools will be available to generate sermons automatically based on the demographics and recent events that may have happened locally or internationally. The systems will be able to create sermons, which will create a maximum sensation among people. The danger which the researcher senses in this are that the messenger of the Word will have no connection with God, who is the source. The threat is that the church will be filled with information generated by algorithms and machines, and the Holy Spirit will have no role to play in these circumstances.

[4] Scott Thumma and Warren Bird, "Recent Shifts in America's Largest Protestant Churches: Megachurches 2015 Report", Hartford Institute for Religion Research, accessed August 5, 2019, http://hirr.hartsem.edu/megachurch/2015_Megachurches_Report.pdf.

Not many Christian leaders are in positions that expose them to both theology and technology. The researcher hopes that this project will help bring awareness about the advancements in technology, which could have an impact on the church and also address some of the significant concerns raised. This project can help others who have expertise in other fields to connect these topics and derive conclusions that are biblical and theologically sound.

Research Design

Nature of the Research

The project was qualitative and employed an intrinsic case study as the primary method of research, with elements of grounded theory. The primary tools used in this project were literature reviews, personal interviews, surveys, documents, and observational field notes. The research included the use of both primary and secondary data.

Data

Primary Data

Primary data included (a) the responses from the surveys administered among one hundred and forty-seven students from seven countries, (b) personal interviews conducted among pastors, Christian and non-Christians with knowledge of AI, and (c) own observations recorded in field notes.

Secondary Data

Secondary data included biblical, theological, and secular literature dealing with issues relevant to the problem of this project.

CHAPTER TWO: A BIBLICAL VIEW OF ATTRIBUTES OF CREATOR GOD AND HIS RELATION WITH HUMANS CREATED IN HIS IMAGE

Attributes of God

The Bible has details about the attributes of the creator God. Some of these attributes are unique to God and are not seen in humans, who were created in the image of God (Gen. 1:26-27).[5] Some of the attributes are found in created humankind but not in the way they are in the creator God. The most common way to categorize the attributes of God is to divide them into incommunicable and communicable attributes. The incommunicable attributes are those that are not communicated or shared with others. The communicable attributes are those which God communicates or shares with others. Wayne Grudem categorizes the attributes of God as mental attributes, moral attributes, attributes describing God's being, attributes of purpose, and summary attributes.[6]

Table 1: Attributes of God.

God's Being	*Mental Attributes*	*Moral Attributes*	*Attributes of Purpose*	*Summary Attributes*
Spirituality	Knowledge	Goodness	Will	Perfection
Invisibility	Wisdom	Love	Freedom	Blessedness
	Truthfulness	Mercy	Omnipotence	Beauty
		Holiness		Glory
		Peace		
		Righteousness		
		Jealousy		
		Wrath		

[5] Unless otherwise noted, all Scripture citations are from The Holy Bible, English Standard Version, (Wheaton, Il: Crossway Bibles, 2001).

[6] Wayne A. Grudem, *Systematic Theology: An Introduction to Biblical Doctrine* (Grand Rapids: Zondervan, 2000), 186.

Understanding some of these attributes is essential to comprehend the abilities of the Creator God of this universe. Out of the attributes found in the Bible, this research will focus on eight that are relevant to the topic of this study. The focus will be on understanding these attributes and the extent to which humans can share and develop these attributes. A clear understanding of the attributes which distinguish God from his creation is essential when human inventions like AI are analyzed and when claims are made that raise humans to the level of God and in some instances, AI machines are equated to God or a superpower due to the knowledge base it has or some abilities it has due to how it is made or programmed to function. Way of the Future Church, the first registered church of AI, has activities that focus on the realization, acceptance, and worship of a Godhead based on AI developed through computer hardware and software.[7] A study of the unique attributes of God, as revealed in the Bible, will be helpful to understanding why any god based on AI can never become a deity to be worshipped and should not be compared to the creator God of this universe.

In this section, the focus will be on the biblical and theological reflection of the attributes of God. Towards the end, essential topics related to AI, which are relevant to the particular attribute will be added along with reflection. A more detailed review of the AI-related topics will be addressed in chapter three.

Knowledge or Omniscience

The knowledge of God or omniscience is a mental attribute that refers to the ability to know everything. Grudem in *Systematic Theology* has described that as "God

[7] "Inside the First Church of Artificial Intelligence," *Wired*, November 15, 2017, accessed October 20, 2019, https://www.wired.com/story/anthony-levandowski-artificial-intelligence-religion.

fully knows himself and all things actual and possible in one single and eternal act."[8] According to Don Hoffman in *The Divine Attributes: Exploring the Philosophy of Religion,* "it is the sort of knowledge that a maximally great being would possess."[9] The quality of knowing everything is called "omniscience." Since God is all-knowing, he is omniscient. Though God is infinite or unlimited, he knows himself fully. God possesses infinite intelligence. According to David Clark in *To Know and Love God*,

> God's knowledge is what God rightly believes as true. God is omniscient; he possesses infinite intelligence. God's knowledge— his grasp of the way things are— is fully adequate, both extensively and intensively. He comprehensively knows all facts, and his grasp of them constitutes a conceptual framework that is as complex as reality itself. God's exhaustive knowledge represents the fullest possible grasp of truth.[10]

The Bible states that only the Spirit of God can comprehend the thoughts of God. Humans can only understand the things freely given by God through his Spirit to understand.

> These things God has revealed to us through the Spirit. For the Spirit searches everything, even the depths of God. For who knows a person's thoughts except the spirit of that person, which is in him? So also no one comprehends the thoughts of God except the Spirit of God. Now we have received not the spirit of the world, but the Spirit who is from God, that we might understand the things freely given us by God. (1 Cor. 2:10-12)

God knows all things that exist and all things that will happen. God's knowledge also makes him know all things possible. The universe God created is very complex, and humanity is still trying to figure out the details. The knowledge of humans about the

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[8] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 190.

[9] Joshua Hoffman and Gary S. Rosenkrantz, *The Divine Attribute: Exploring the Philosophy of Religion* (Malden, MA: Blackwell, 2002), 111.

[10] David K. Clark, *To Know and Love God: Method for Theology* (Wheaton, Ill.: Crossway Books, 2003), 355.

universe has increased with advancements in science and technology, but that has also left humankind with more questions. There are many possibilities within the creation, and only God knows all those possibilities. God himself says that as heavens are higher than the earth, so are his ways and thoughts higher than human ways (Isa. 55:9).

Nothing is hidden from God, and he knows every tiny detail of a person. Jesus said that God knows the needs of a person even before they ask him (Matt. 10:30). David, when reflecting on the knowledge of God, thinks that He knows human thoughts and actions.

> O Lord, you have searched me and known me! You know when I sit down and when I rise up; you discern my thoughts from afar. You search out my path and my lying down and are acquainted with all my ways. Even before a word is on my tongue, behold, O Lord, you know it altogether. For you formed my inward parts; you knitted me together in my mother's womb. I praise you, for I am fearfully and wonderfully made. Wonderful are your works; my soul knows it very well.
> My frame was not hidden from you, when I was being made in secret, intricately woven in the depths of the earth. Your eyes saw my unformed substance;
> in your book were written, every one of them, the days that were formed for me, when as yet there was none of them. (Ps. 139:1-4;13-16)

In order to challenge the full knowledge of God, some objections are raised, pointing to the places where God says he will not remember the sins of people (Isa. 43:25). According to Grudem, "this does not mean that there is a limit to the knowledge of God. This means that God will not let the knowledge of our sins play any part in the way he relates to us."[11] God still knows a person's past and the sin committed. Forgiveness of sin by God does not erase the sin from God's memory, or this does not mean God has no way to know that anymore. God will not hold that against a person anymore. So, this argument does not limit or challenge the knowledge of God.

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[11] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 192.

Human knowledge is limited when compared to God's knowledge. As children grow, they gain knowledge through education and experiences. The knowledge gained is limited. Modern technology has augmented or added knowledge in humans with the availability of data on the internet, which can be easily accessed. According to Bernard Marr, "The amount of data we produce every day is truly mind-boggling. There are 2.5 quintillion bytes of data created each day at our current pace, but that pace is only accelerating with the growth of the Internet of Things (IoT). Over the last two years alone, 90 percent of the data in the world was generated."[12] Anyone can access these details by simply searching on a search engine, but this is limited to what has already been known to humans and made available on the internet. Hence the knowledge of humans cannot be compared to that of God. AI is based on information that is already made available and does not gain or generate any new knowledge. AI can process data and do calculations faster and predict outcomes based on historical data. These capabilities of AI cannot be compared to the knowledge of the creator God.

Truthfulness

The truthfulness of God is a mental attribute which, according to Grudem, "means that he is the true God and that all his knowledge and words are both true and the final standard of truth."[13] The God revealed in the Scripture is a true and real God, and all other gods are idols. In Jeremiah 10:10-11, it is said about God that "but the Lord is the

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[12] Bernard Marr, "How Much Data Do We Create Every Day? The Mind-Blowing Stats Everyone Should Read" *Forbes*, accessed January 5, 2020, https://www.forbes.com/sites/bernardmarr/2018/05/21/how-much-data-do-we-create-every-day-the-mind-blowing-stats-everyone-should-read/#f8e152460ba9.

[13] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 195.

true God; he is the living God and the everlasting King. At his wrath the earth quakes, and the nations cannot endure his indignation. Thus, shall you say to them: The gods who did not make the heavens and the earth shall perish from the earth and from under the heavens." John writes about knowing the true God in John 17:3, "and this is eternal life, that they know you, the only true God, and Jesus Christ whom you have sent. Again in 1 John 5:20, John writes about the true God that "and we know that the Son of God has come and has given us understanding, so that we may know him who is true; and we are in him who is true, in his Son Jesus Christ. He is the true God and eternal life."

God, in his being or character, is the one who fully conforms to the idea of what God should be. Job tells that God is perfect in knowledge (Job 37:16), and this means that God knows all things and that His knowledge is perfect, in the sense that He is never mistaken in His perception or understanding of the world. All that He knows and thinks is true and is the correct understanding of the nature of reality. This means that the standard of real knowledge is conformity to God's knowledge. All truth is known within God's unified purview. In this sense, all truth is God's truth. The content of God's truth amounts to "absolute truth." Absolute truth is coextensive with God's omniscient knowledge of reality.[14]

This also means that God is reliable and faithful in His words. Concerning His promises, God does what He promises to do, and He is never unfaithful to His promises. God's faithfulness means that God will always do what He has said and fulfill what He has promised. This also implies that God's word about himself, and His creation

[14] Clark, *To Know and Love God: Method for Theology,* 354.

completely correspond to His reality. God always speaks the truth when He speaks. The truthfulness of God is also communicable in that humans can, in part, imitate it by striving to know God and His word.

For humankind, true faith is taking God at His word and relying on Him to do as He has promised. God commanded humans to imitate His truthfulness and avoid falsehood in this world. The Christians are commanded to love the truth and hate falsehood and are asked not to bear false witness against their neighbor (Exod. 20:16). God commands His people not to devise evil or false oaths. Zechariah 8:17 states, "do not devise evil in your hearts against one another, and love no false oath, for all these things I hate, declares the Lord."

The truthfulness found in God cannot be compared to the truthfulness found in created humans. Since the Fall, humans are tainted by the effect of sin. By the time of Noah, it was found that there was great wickedness among the human race, and every inclination of the thought of the human heart was only evil all the time. (Gen 6:5). God wants to restore humankind to a state of truthfulness, which will only be fully realized after glorification.

AI-based machines are supposed to be truthful and without any bias found in humans. The fact is that AI learns from the data which is provided, and it will only be truthful to the data which was provided and cannot pursue truth beyond what is ingested from the data.

Love

In the Bible, John tells that "God is love" (1 John 4:8). The love of God is a moral attribute, and Grudem writes that "God's love means that God eternally gives of himself

to others."[15] God's love can be viewed as self-giving for the benefit of others, and it is part of the nature of God to present Himself to bring about blessing or good for others. One of the fundamental teaching of the Bible and the truth is that God loves the people He created[16]. This attribute of God was active even before the creation among the members of the Trinity (John 17:24). Jesus mentions the love of Father, which existed before the foundation of the world. This indicated that the love of God existed from eternity and continues at the present time. The love of God is reciprocal since Jesus said that his obedience to the Father shows the world his love for the Father (John 14:31). The love of God toward humanity is mentioned in the Bible. When talking about the love of God, it is referred to as "great love" with which he loved us.

> But God, being rich in mercy, because of the great love with which he loved us, even when we were dead in our trespasses, made us alive together with Christ— by grace you have been saved— and raised us up with him and seated us with him in the heavenly places in Christ Jesus, so that in the coming ages he might show the immeasurable riches of his grace in kindness toward us in Christ Jesus. (Eph. 2:4-7)

John 3:16 says, "For God so loved the world, that he gave his only Son, that whoever believes in him should not perish but have eternal life. The love of God toward humankind was not the result of something they did to receive the love of God. God first loved and sent Jesus as a propitiation for the sins of humankind (1 John 4:10). Paul says that God showed his love for humankind in such a way that when they were still sinners, Christ died for them (Rom. 5:8). The love of God is also referred at a personal level

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[15] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 199.

[16] John Alexander, "God's Love.," *The Other Side* 33 No. 1 (1997), 44-45.

towards each person, and Paul mentions it in a personal way that Son of God loved and gave himself for him. (Gal. 2:20).

The humans also have love as an attribute, but it is not like the love of God. Many people love others, and for a Christian, love is a fruit of the Spirit (Gal. 5:22). God commanded people to love Him with the whole heart, soul, and mind and their neighbors as themselves (Matt. 22:37-38). John says that obedience to the commandments of God is the proof of the love for Jesus (John. 15:15). The disciples of Jesus were commanded to love not only one another but also their enemies, which is a reflection of God's love (John 13:35; Matt. 5:43-48).

The Bible teaches that God is unchanging, and his love is also unchanging. Human love is different, and it can vary with circumstances. Many exhortations are given so that a person can grow in their love. First Corinthians chapter thirteen mentions about the importance of love. Jesus warned his disciples that the love of many would grow cold (Math. 24:12). The church in Ephesus was rebuked for forsaking the love they had at first (Rev. 2:4). The love of humankind can change based on experiences, and it is not the same as the unchanging love of God mentioned in the Bible.

There are AI robots that can mimic emotions, including love. These are based on algorithms and cannot be compared to the true love seen in God and humans created by God. An AI machine cannot have the capability to discern a situation beyond what is programmed to make decisions based on love and compassion.

Holiness

God's holiness is a moral attribute which, according to Grudem, means that "he is separated from sin and devoted to seeking his own honor."[17] This means both a relational and moral quality. The idea of holiness in Old Testament passages includes separation from evil and devotion to God's own glory (Ex. 30:25-33; Ps. 24:3). The root idea of holiness in the Bible is separation. God is holy because He is different from humankind, and holiness is one of the attributes. Holiness is a reminder of "the essential difference between Creator and created."[18] In the tabernacle, the Holy Place was separated from the evil and sin of the world. This place was dedicated to God's service. God commanded that there be a veil that separated the Holy Place from the Most Holy Place (Exod. 26:33). The place where God himself dwelt was itself holy, and He was the only holy one. One seraph called to another and said: "Holy, holy, holy is the Lord of hosts; the whole earth is full of his glory!" (Isa. 6:3).

According to George Thomas Kurian in *The Encyclopedia of Christian Civilization*,

> Holiness is the exclusive and defining characteristic of God and distinguishes the divine from the profane and human. Its primary attributes are sinlessness, incorruptibility, and purity in the sense that light is free of darkness. It is one of the characteristics that cannot be transferred in its fullest sense to human beings because human beings are mired in space and time and original sin.[19]

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[17] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 202.

[18] Charles H.H. Scobie, *The Ways of Our God: An Approach to Biblical Theology* (Grand Rapids, MI: Eerdmans Pub, 2003), 120.

[19] *The Encyclopedia of Christian Civilization*, 1st ed., s.v. "Holiness*,"* accessed October 26, 2019, Credo Reference.

Another aspect of God's holiness is his absolute purity or goodness. This means that he is untouched and unstained by evil in the world. He does not, in any sense, participate in it.[20] God commands His people to be holy. The holiness provides a pattern for His people to imitate.[21] Holiness is an idea of separation from evil and sin and the idea of devotion to God in serving Him and obeying His commandments. Christians are commanded to strive for holiness without which no one will see God (Heb. 12:14). Paul encourages Christians to "cleanse ourselves from every defilement of body and spirit, bringing holiness to completion in the fear of God" (2 Cor 7:1). According to Charles Scobie, "It is God himself is primarily holy, and places, objects, or people become holy only when set apart from all common uses and dedicated to the worship and service of God. The human response to holiness must be reverence, awe, fear, and a recognition of moral inadequacy."[22]

When it comes to AI, they are not moral agents, and thus no moral qualities can be attributed to them. AI robots can be used in a way that makes people commit sin and hence make them unholy. There are AI-powered robots that are used as sex toys that violate the commandments of God. There are ethical and moral issues related to AI, which has an impact on the holiness of humans.

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[20] Millard J Erickson, *Christian Theology,* 3rd ed. (Grand Rapids, MI: Baker Academic, 2013), 311.

[21] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 202.

[22] Scobie, *The Ways of Our God: An Approach to Biblical Theology*, 120.

Righteousness

God's righteousness is a moral attribute, and according to Grudem, it means that "God always acts in accordance with what is right and is himself the final standard of what is right."[23] God's righteousness also means that the law of God, being a true expression of his nature, is as perfect as he is.[24] The Bible says that the law of God is perfect, and his rules are true and righteous.

> The law of the Lord is perfect, reviving the soul; the testimony of the Lord is sure, making wise the simple; the precepts of the Lord are right, rejoicing the heart; the commandment of the Lord is pure, enlightening the eyes; the fear of the Lord is clean, enduring forever; the rules of the Lord are true, and righteous altogether. More to be desired are they than gold, even much fine gold; sweeter also than honey and drippings of the honeycomb. (Ps.19:7-10)

God commands only what is right and what will, therefore, have a positive effect on the one who believes and obeys. The righteousness of God also means that his actions are in accord with the law he has established. God's acts conform to the highest standard of morality, which is God's character and nature. God acts consistently with his perfect character and nature. In the Bible, God speaks and commands what is right. God is righteousness, and hence He must treat people according to what they deserve. Thus, God must punish sin, for it does not deserve a reward: it is wrong and deserves punishment. If God were not to punish sin, he would cease to be righteous.

God, in His justice, graciously declares the believers as righteous. God's righteousness is related to mercy, grace, and love. God's righteousness is seen in the redemption of humankind after the Fall. God's righteousness is revealed in his moral law

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[23] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 204.

[24] Erickson, *Christian Theology*, 313.

expressing his moral nature and, in his judgment, granting to all in matters of merit precisely what they deserve. His judgment is not arbitrary or capricious, but principled and without respect of persons. In righteousness, God delivers the needy from injustice and persecution. Eventually, God will create a new heaven and a new earth in which righteousness will dwell (Isa. 65:17).

According to G.R. Lewis, ethically, God is righteous.

> God's wrath is revealed as sinners suppress his truth and hold it down in unrighteousness (Rom. 1:18-32), both Jews and Gentiles (Rom. 2:1-3:20). In the gospel a righteousness from God is revealed, a righteousness that is by faith from first to last (Rom. 1:17; 3:21). Believers are justified freely by God's grace that came by Jesus Christ, who provided the sacrifice of atonement (Rom. 3:25). Hence, like Abraham, those who are fully persuaded that God can do what he has promised (Rom. 4:21) find their faith credited to them for righteousness (Rom. 4:3, 24). [25]

God sent Jesus Christ into this world to become a sacrifice to bear the punishment for sin. Christ's death to pay the penalty for the sins of humankind showed that God was truly righteous. The appropriate punishment for sin was given even though He did forgive His people for their sins. Humans do not have a righteousness of their own, but they get it from God.

An AI machine is trained using the data collected from humans; so, it is programmed to behave based on what it has learned from the dataset. Since there is no morality of its own in an AI robot, the topic of righteousness in AI is not valid, and comparing AI with the righteousness of God is not valid.

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[25] *Evangelical Dictionary of Theology,* 2nd ed., s.v. "God, Attributes Of," accessed October 20, 2019, Credo Reference.

Freedom

God has the freedom to do anything consistent with his character (Num.23:19). According to Grudem,

> God's freedom is that attribute of God whereby he does whatever he pleases. This definition implies that nothing in all creation can hinder God from doing his will. This attribute of God is closely related to his will and his power. Yet this aspect of freedom focuses that God is not constrained by anything external to himself and he is free to do whatever he wishes to do. There is no person or force that can dictate to God what He should do. He is under no authority or external restraint.[26]

No one can oppose the will of God. Even kings and rulers of this world cannot oppose the plans of God. Psalmist says that "Our God is in the heavens; he does all that he pleases" (Psalm 115:3). Many times, people try to discover the reason why God has done something and question Him. By questioning God, many times, people indirectly question the freedom of God to do what He wants to do. Humans were created with some level of freedom. In the garden of Eden, Adam and Eve had the freedom to choose which fruit to eat, but the commandment of God constrained their freedom, and they were expected to obey Him. When they chose to exercise their freedom and disobey God, they had to face the consequences of disobedience. So, even though humans are given the freedom, it is not separate or outside the realm of God's will or plan for humankind. God has set limits and boundaries, and as long as humankind confines themselves to those, they will be in a blessed state.

With all the technological and scientific advancements, it is crucial to keep the God-set boundaries around; otherwise, humankind will have to pay the price. God has made humankind as creatures with a will, and they have the right to exercise choice and

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[26] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 216.

make real decisions regarding the events of their life. This will is not free in the way God's will is. God has given relative freedom within the spheres of activity in the universe that He has created.

There are AI applications that are autonomous and can make decisions based on past data. There is no intrinsic ability to exercise freedom but some algorithms which help the AI to come to conclusions based on past human behavior or decisions. The freedom of humans or AI cannot be viewed similar to the freedom found in the creator God.

Omnipotence or Sovereignty

The omnipotence of God means that he is all-powerful, and it refers to his power to do what He decides to do. According to Grudem, God's omnipotence means "that God is able to do all his holy will."[27] The word omnipotent comes from Omni, meaning "all" and potent meaning "power." In the book of Job, it is acknowledged that God can do all things and that none of His plans can be thwarted" (Job 42:2). The Bible has a lot to say about the power and might of God. In Psalms 28:8, the psalmist says that" Who is this King of glory? The Lord, strong and mighty, the Lord, mighty in battle!"

In the creation account, the omnipotence of God can be seen as it happened as God spoke (Gen. 1). In the Scriptures, it is stated that nothing is too hard for the Lord, and God can do far more abundantly than we ask or think (Eph. 3:20). God is also called "Almighty" (2 Cor. 6:18; Rev. 1:8), which suggests the possession of all power and authority. God has infinite power and is, therefore, not limited to doing what He has

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[27] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 216.

done. He is the one who created everything in the universe, controls it, and sustains it. The kings and rulers are appointed, and God has the power to control them. In Proverbs 21:1, it is said that "the king's heart is a stream of water in the hand of the Lord; he turns it wherever he will" (Prov. 21:1). God knows and controls everything.

> Daniel answered and said: "Blessed be the name of God forever and ever, to whom belong wisdom and might. He changes times and seasons; he removes kings and sets up kings; he gives wisdom to the wise and knowledge to those who have understanding; he reveals deep and hidden things; he knows what is in the darkness, and the light dwells with him." (Dan. 2:20-22)

There are some things that God cannot do. According to Grudem, God cannot or will not do anything that would deny His character, and hence omnipotence is defined as God's ability to do all His holy will. God will only do things that are consistent with His character. God cannot lie, sin, deny himself or be tempted with evil, and He cannot cease to exist, or cease to be God or act in a way inconsistent with any of His attributes. [28]

God's sovereignty also means that he has authority over his creation. Humankind does not have infinite power or omnipotence as God has but is given the power to bring about results. They have physical power, mental power, spiritual power, and persuasive power and power in various kinds of authoritative structures like family, church, and civil government. When they use these powers in a way that is pleasing to God and which is consistent with His will, it brings Him glory, and it reflects the character of God. Humans need materials and tools to create anything, including any AI-powered device. God spoke, and everything was created simply by the power of His word (Ps. 33:6). Humans

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[28] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 217.

are found to be misusing the power given by God whenever they use it to rebel against Him and His authority, which has always led to undesirable consequences.

Omnipresence

Omnipresence means God is present everywhere at the same time. While many theists claim that God is omnipresent, it is often not clear what is being claimed when it is claimed that God is omnipresent.[29] According to Grudem, God is unlimited concerning space, and this characteristic of God's nature is called God's omnipresence. Omnipresence can be defined as "God does not have size or spatial dimensions and is present at every point of space with his whole being, yet God acts differently in different places."[30] When looking at the creation of the material world, it is clear that God is the Lord of space since He created it also.

Omnipresence is simply a consequence of omniscience and omnipotence. On the one hand, because of the virtue of divine omniscience, God knows what is happening at each location in space-time; on the other hand, in virtue of divine omnipotence, God can act at each location in space-time. Omnipresence means that God is present everywhere. When David speaks about this attribute of God, he says that there is no place to hide from God. God's presence is everywhere.

> Where shall I go from your Spirit? Or where shall I flee from your presence? If I ascend to heaven, you are there! If I make my bed in Sheol, you are there! If I take the wings of the morning and dwell in the uttermost parts of the sea, even there your hand shall lead me, and your right hand shall hold me. (Ps. 139:7-10)

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[29] Graham Oppy, *Describing Gods: An Investigation of Divine Attributes* (Cambridge: Cambridge University Press, 2014), 250.

[30] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 173.

While the thought that God is present everywhere with his whole being ought to encourage people much in prayer no matter where they are, the fact that no one place can be said to contain God should also discourage them from thinking that there is some special place of worship that gives people exclusive access to God: he cannot be contained in any one place.[31]

When writing about how the idea of omnipresence sometimes troubles people, Grudem quotes a paragraph from Herman Bavinck's *The Doctrine of God*, illustrating the practical application of the doctrine of God's omnipresence.[32]

> When you wish to do something evil, you retire from the public into your house where no enemy may see you; from those places of your house which are open and visible to the eyes of men you remove yourself into your room; even in your room you fear some witness from another quarter; you retire into your heart, there you meditate: he is more inward than your heart. Wherever, therefore, you shall have fled, there he is. From yourself, whither will you flee? Will you not follow yourself wherever you shall flee? But since there is One more inward even than yourself, there is no place where you may flee from God angry but to God reconciled. There is no place at all whither you may flee. Will you flee from him? Flee unto him.

God is also present in different ways in different places and acts differently in various areas in his creation. God can be present to punish, bless, or sustain. There is no human attribute that can be compared to God's omnipresence. Humans are limited by space and time. There is some technology available with the ability to stream themselves to different places by audio and video. Surveillance cameras can continuously record everything happening at a place, but they are very limited in scope. Microsoft is working on AI neural Text-to-speech converter (TTS) and holograms with the primary aim of

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[31] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 174.

[32] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 177.

overcoming the two hazards for communication, i.e., distance and language. By using this Azure AI hologram technique, anyone can be virtually anywhere, speaking any language.[33] It is an advanced technology but cannot be seen as anything which will be able to have the real presence of a person everywhere.

Created in the Image of God

When analyzing AI and the applications designed with the intent to replicate what humans do, one area of focus should be relationality. Most robots are designed to look like humans. Companies are trying to make robots that appear and behave like humans. Out of everything created by God, humankind is created differently. The Bible teaches that humans are made in the image of God (Lat. *imago Dei*). The idea first occurs in the Bible in Gen. 1:26–28, where God creates humanity, both male and female, in his "image" and "likeness" and granted them the task of subduing the earth and ruling over the animals.

> Then God said, "Let us make man in our image, after our likeness. And let them have dominion over the fish of the sea and over the birds of the heavens and over the livestock and over all the earth and over every creeping thing that creeps on the earth." So God created man in his own image, in the image of God he created him; male and female he created them. And God blessed them. And God said to them, "Be fruitful and multiply and fill the earth and subdue it, and have dominion over the fish of the sea and over the birds of the heavens and over every living thing that moves on the earth." (Gen. 1:26-28)

Humans were created in the likeness of God. In Genesis 5:1-2, it the written that "This is the book of the generations of Adam. When God created man, he made him in the likeness of God. Male and female he created them, and he blessed them and named them Man when they were created." Humans were created for the glory of God. Isaiah

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[33] Microsoft, "Demo: The magic of AI neural TTS and holograms at Microsoft Inspire 2019" (video), July 17, 2019, accessed October 20, 2019, https://www.youtube.com/watch?v=auJJrHgG9Mc.

43:6-7 describes God's desire for humankind, "I will say to the north, Give up, and to the south, Do not withhold; bring my sons from afar and my daughters from the end of the earth, everyone who is called by my name, whom I created for my glory, whom I formed and made."

Humankind was created in the image or likeness of God and was created for His glory. According to Grudem, the fact that humans are in the image of God means that humans are like God and represent God.[34] When God says, "Let us make humans in our image, after our likeness" (Gen. 1:26), the meaning is that God was going to make a creature similar to himself. The word image can also be used for something that represents something else.

According to Noreen LuAnn Herzfeld, humans have made many advancements in technology and science, and it has resulted in creating an image of themselves, an *imago hominis*, in an intelligent computer.[35] In this generation, the number of visual images seen by a person has increased drastically due to smartphones and computers. Apart from visual images, public images are created in minds through symbols of power or representations of beauty. According to Catherine McDowell in *In the Image of God He Created Them,* when it comes to the interpretation of Genesis, "the dominant view throughout the history of interpretation has been that these terms refer to a spiritual or mental similarity to God with which humans were endowed at creation."[36] Again Norren

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[34] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 442.

[35] Noreen LuAnn Herzfeld, "Imago Dei/imago Hominis: Interacting Images of God and Humanity in Theology and in Artificial Intelligence" (diss., Graduate Theological Union, 2000), i.

[36] Beth Felker Jones and Jeffrey W. Barbeau, ed., *The Image of God in an Image Driven Age: Explorations in Theological Anthropology* (Downers Grove: InterVarsity Press, 2016), 30.

says that the expressions “in our image” and “according to our likeness” are used of no other creature; humans are not merely the most developed form in God’s creation but are set apart, relating to the divine sphere as well as to the created world.[37]

After the Fall, humankind became sinful, but there is still enough likeness to God remaining in all humans (Gen. 9:6; Jam. 3:9). The image has been distorted but not lost completely. Moral purity has been lost, and sinful character does not reflect God’s holiness. His intellect is corrupted by falsehood and misunderstanding; his speech no longer continually glorifies God; his relationships are often governed by selfishness rather than love, and so forth. Though humans are still in the image of God, in every aspect of life, some parts of that image have been distorted or lost. After the fall, then humans are still in God's image—are still like God, and still represent God—but the image of God in them is distorted; they are less fully like God than they were before the entrance of sin.[38]

Many aspects of humankind show that they are more like God than all other created beings. Most of these aspects cannot be found in AI. When it comes to moral aspects, humans are morally accountable before God for their actions and have an inner sense of right and wrong that sets them apart from animals. When they act according to God’s moral standards, their likeness to God is reflected in behavior that is holy and righteous before him, but, by contrast, their unlikeness to God is reflected whenever they

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[37] Noreen L. Herzfeld, *In Our Image: Artificial Intelligence and the Human Spirit* (Minneapolis, MN: Fortress Press, 2002), 11.

[38] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 444.

sin.[39] Humans have not only physical bodies but also immaterial spirits, and they can, therefore, act in ways that are significant in the immaterial, spiritual realm of existence. It means that they have a spiritual life that enables them to relate to God and pray and praise him, and to hear Him speaking his words. Animals do not need salvation and do not pray. When humans die, it is physical death and not an end to everything. They have immortality, and they will not cease to exist but will live forever.

Humans can reason and think logically and learn, which sets them apart from the animal world. Animals sometimes exhibit unusual behavior, but they cannot be compared to the remarkable innovations by humans, who continue to develop more exceptional skill and complexity in technology, in agriculture, in science, and nearly every field of endeavor. The use of sophisticated, abstract language sets humans far apart from animals. Humans also have an inward awareness of the distant future and are creative in areas such as art, music, literature, science, and technology. [40] Humans can relate to God, and the depth of interpersonal harmony experienced in human marriage, family, and communities is much higher than what can be seen among animals. God created men and women with different roles and has given them the right to rule over the creation (Gen.1:26,28).

God created each human being in His image with intrinsic and equal worth, dignity, and moral agency, distinct from all creation, and that humanity's creativity is intended to reflect God's creative pattern. The image of God makes humankind human,

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[39] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 446.

[40] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 447.

and they cannot lose the image without ceasing to be what they are. The image of God in humans, even in a broken or distorted form, is the reason why they are is redeemable and worth redeeming. In the Artificial Intelligence: An Evangelical Statement of Principles, it is stated that any part of creation, including any form of technology, should never be used to usurp or subvert the dominion and stewardship which has been entrusted solely to humanity by God; nor should technology be assigned a level of human identity, worth, dignity, or moral agency.[41]

Human's Relationship with God and others

Humanity was created for the glory of God and is commanded to worship God alone. God also gave the commandment regarding how humans should relate to one another. It is essential to look at how human's relationship with God and others should be since AI has an impact on this area.

One of the main themes of the Bible is the relationship between God and Humans. God created humans and, before the fall of humans, had a relationship that was unique and which existed only between God and humankind. Later God came and established relationships and covenants with individuals, including Noah and Abraham. Then God sends his son Jesus Christ to die as a sacrifice to redeem the fallen humans. The initiative is from God to reclaim the broken relationship provided that humans are willing to accept Him.

Jesus Christ taught his disciples that loving God in the best way possible is the greatest command, and the second one is to love their neighbor. Giving priority to the

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[41] "Artificial Intelligence: An Evangelical Statement of Principles," *ERLC*, April 11, 2019, accessed October 25, 2019, https://erlc.com/resource-library/statements/artificial-intelligence-an-evangelical-statement-of-principles.

relationship with the creator, God is one of the main themes of the Bible, and Jesus came to restore that.

> And he said to him, "You shall love the Lord your God with all your heart and with all your soul and with all your mind. This is the great and first commandment. And a second is like it: You shall love your neighbor as yourself. On these two commandments depend all the Law and the Prophets." (Mat. 22:37-40)

The intent of God to relate to His people is evident in the ten commandments given to the Israelites through Moses.

> I am the Lord your God, who brought you out of the land of Egypt, out of the house of slavery. "You shall have no other gods before me. "You shall not make for yourself a carved image, or any likeness of anything that is in heaven above, or that is in the earth beneath, or that is in the water under the earth. You shall not bow down to them or serve them, for I the Lord your God am a jealous God, visiting the iniquity of the fathers on the children to the third and the fourth generation of those who hate me, but showing steadfast love to thousands of those who love me and keep my commandments. "You shall not take the name of the Lord your God in vain, for the Lord will not hold him guiltless who takes his name in vain. (Exod. 20:2-7)

God does not want humankind to go after or worship any created beings or things of the world. When it comes to his relationship with humanity, He is jealous and does not want them to go after anything else. Throughout the history of Israelites, they have backslidden in their relationship with God, and they have gone after idols and other gods. God punished them with the ultimate intention to restore them to a good relationship with Him. They were blessed and became prosperous whenever they walked in a good relationship with God.

God made covenants with humankind. A covenant is an unchangeable, divinely imposed legal agreement between God and humans that stipulates the conditions of their

relationship.[42] In the Bible, there is the Edenic covenant (Gen. 1:28-30), Noahic covenant (Gen. 9:8-17), Abrahamic covenant (Gen. 12-17), Mosaic covenant (Exo. 19-24), Priestly covenant, Davidic covenant (2 Sam. 7) and the New Covenant established with the death of Jesus Christ. An initiative from God is seen to establish and maintain a good relationship with humanity, whom He created in His image.

The Bible also provides guidelines about the relationship a human can have with other humans. Some types of relationships are forbidden, and sexual relations have boundaries defined clearly. Jesus equated lustfully looking to adultery and anger to murder. There are clear instructions against humans having any physical relationship with animals.

> Whoever lies with an animal shall be put to death. (Exo. 22:19)
>
> And you shall not lie with any animal and so make yourself unclean with it, neither shall any woman give herself to an animal to lie with it: it is perversion. (Lev. 18:23)

God has permitted sexual relationships only within the covenant relationship of marriage between man and woman (1 Cor. 7:1-5; Heb. 13:4). Any physical relationship outside of marriage is sin, and God does not want people to commit adultery. Humans are supposed to love one another and maintain a harmonious relationship with one another.

AI-powered robots are being developed, which can be used as sex toys. Some people have even started using them as married partners. Pornography existed for a long time, but this is in a dimension that did not exist earlier. People want to marry a robot and have a relationship with it and use it for their pleasure. There are already brothels fully

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[42] Grudem, *Systematic Theology: An Introduction to Biblical Doctrine,* 515.

staffed with robots operating in Toronto and some cities in Europe. There was a plan to start one in Houston, which the city council voted to ban within the city limits[43]. God does not permit humans to have physical relationships with anything except between a man and a woman.

> Then the Lord God said, "It is not good that the man should be alone; I will make him a helper fit for him." Now out of the ground the Lord God had formed every beast of the field and every bird of the heavens and brought them to the man to see what he would call them. And whatever the man called every living creature, that was its name. The man gave names to all livestock and to the birds of the heavens and to every beast of the field. But for Adam there was not found a helper fit for him. (Gen. 2:18-20)

In all the living creatures, there was no suitable helper found for Adam. Adam gave a name for all livestock and birds. God made a woman be the companion of the man he created.

> So the Lord God caused a deep sleep to fall upon the man, and while he slept took one of his ribs and closed up its place with flesh. And the rib that the Lord God had taken from the man he made into a woman and brought her to the man. Then the man said, "This at last is bone of my bones and flesh of my flesh; she shall be called Woman, because she was taken out of Man." Therefore a man shall leave his father and his mother and hold fast to his wife, and they shall become one flesh. And the man and his wife were both naked and were not ashamed." (Gen. 2:21-25)

God's design for human sexuality prescribes that the sexual union be an exclusive relationship between a man and a woman. This relationship is a lifelong covenant of marriage. The pursuit of sexual pleasure as the justification for the development or use of AI should not be pursued, and Christians should not embrace it. The objectification of humans that results from employing AI for sexual purposes and as a substitute for the

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[43] Dan Solomon, "Everything You Should Know About the Proposed Sex Robot Brothel in Houston," *Texas Monthly*, accessed February 7, 2019, https://www.texasmonthly.com/the-culture/everything-need-know-sex-robot-brothel-opening-houston/.

biblical expression of sexuality between a husband and wife according to God's design for human marriage should be avoided as it violates the plan and purpose of God for humankind.

Computers may someday be relational enough to be considered co-creators. However, humans must also resist the temptation to replace a relationship with God or with other humans with a relationship with our creation. Such relationships might be less demanding, but it is precisely in the demand humans place on one another, in the difficult parts of human relationships, that they are called to grow.[44]

Created Humankind as Creators

Technology advancements are happening at a fast pace, and humans are achieving what could not be imagined a few decades ago. In Genesis Chapter 1, God spoke, and it came into being. Now people can talk to their smart devices, and it will perform the actions requested or commanded. The children are growing up with a different worldview as humans have become Techno sapiens. Today most people rely on Google or similar search engines to find answers and expect these search engines to know everything. Psalms 115 talks about the idols made by human hands which have a mouth, but cannot speak, they have eyes, but cannot see, they have ears, but cannot hear, they have noses, but cannot smell, they have hands, but cannot feel, they have feet, but cannot walk, nor can they utter a sound with their throats. Now humans are creating robots that can speak, see, hear, smell, walk, touch, and talk.

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[44] Ulf Görman, Willem B. Drees and Hubert Meisinger, ed. *Creative Creatures: Values and Ethical Issues in Theology, Science, and Technology*, Issues in Science and Theology (New York: T & T Clark International, 2005), 51.

God created humankind in His image and gave them different abilities, including intelligence, knowledge, and wisdom. Humans can develop the skills they have, and it has resulted in many scientific and technological developments. The Bible mentioned specific instances when people were given unique ability or skill by God to accomplish His purpose.

> The Lord said to Moses, "See, I have called by name Bezalel the son of Uri, son of Hur, of the tribe of Judah, and I have filled him with the Spirit of God, with ability and intelligence, with knowledge and all craftsmanship, to devise artistic designs, to work in gold, silver, and bronze, in cutting stones for setting, and in carving wood, to work in every craft. And behold, I have appointed with him Oholiab, the son of Ahisamach, of the tribe of Dan. And I have given to all able men ability, that they may make all that I have commanded you:" (Exod. 31:1-7)

Humans can create many things, but those abilities cannot be compared with the abilities of the creator God. God spoke, and it came into existence (Gen. 1:1-24). Humans create using materials that are already available. Humans are not equal to God but work with and for God in the world. Humans are not at an equal level with God when it comes to creating anything new. Being the image-bearers of God, humans can co-create but at a level that is lower than that of God.

There is AI, which is used to inform and aid human reasoning and moral decision-making as it is a tool that excels at processing data and making determinations as it often mimics or exceeds human ability. These excel in data-based computation, but the technology is incapable of possessing the capacity for moral agency or responsibility.

> "You shall have no other gods before me. "You shall not make for yourself a carved image, or any likeness of anything that is in heaven above, or that is in the earth beneath, or that is in the water under the earth. You shall not bow down to them or serve them, for I the Lord your God am a jealous God, visiting the iniquity of the fathers on the children to the third and the fourth generation of those who hate me, (Exod. 20:3-5)

AI machines should not be seen as a god when it becomes powerful from a task execution perspective. AI is not worthy of humanity's hope, worship, or love. Humans should not be equated to Creator God when they create something which may appear to exceed human intelligence. Humans should not cede moral accountability or responsibilities to any form of AI that will ever be created. In the Bible, it is clear that only humans will be judged by God based on their actions (Heb. 9:27). No tools developed will be subject to judgment. While technology can be created with good use in view, it is not a moral agent. Humans alone bear the responsibility for moral decision making.

> He will render to each one according to his works: to those who by patience in well-doing seek for glory and honor and immortality, he will give eternal life; but for those who are self-seeking and do not obey the truth, but obey unrighteousness, there will be wrath and fury. (Rom. 2:6-8)

The development of AI is a demonstration of the unique creative abilities of human beings, among many other things they have developed. When AI is employed per God's moral will, it is an example of human obedience to the divine command to steward creation and to honor Him. Any technology innovation for the glory of God, the sake of human flourishing, and the love of neighbor are good and should be done in ways that lead to greater flourishing and the alleviation of human suffering. Human beings are God's created co-creators whose purpose is to be the agency, acting in freedom, to birth the future that is most wholesome for the nature that has birthed us—the nature that is not only our genetic heritage but also the entire human community and the evolutionary and

ecological reality in which and to which humanity belong. Exercising this agency is said to be God's will for humans.[45]

Potential of United Human Intelligence

With the coming of the internet, people have come closer to each other than ever before in some aspects. This has alienated people from each other as there are more virtual relationships and conversations than with real people. Now many projects are undertaken jointly by people from different parts of the world. The scale at which it is happening now was not possible earlier. Ideas and thoughts can be shared with the world within seconds. The first chapter of the Bible records the account of the creation, which includes humankind. God created humankind in his image. Genesis 1:27 says that "So God created humans in his own image, in the image of God he created him; male and female he created them."

Humans were created with many abilities, including physical, mental, and spiritual. The Bible reveals that humans were highly intelligent from the beginning. Adam was able to give names to all the livestock, the birds in the sky, and all the wild animals (Genesis 2:19-20). Later the invention of musical instruments and metallurgy is seen (Genesis 4:19–22). The ark which Noah built according to the specifications provided by God required some sophisticated engineering. The Bible is very clear that God gives knowledge, wisdom, and understanding to people. Proverbs 2:6 states that God gives wisdom, "For the Lord gives wisdom; from his mouth come knowledge and understanding."

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[45] Victoria Lorrimar, "The Scientific Character of Philip Hefner's 'Created Co-Creator'," *Zygon* 52, no. 3 (September 2017): 726-746, accessed October 25, 2019, EBSCOhost Academic Search Premier.

When the construction of the Ark of the Covenant was taking place, God specifically chose Bezalel son of Uri, the son of Hur, of the tribe of Judah, and filled him with the Spirit of God, with wisdom, with understanding, with knowledge and with all kinds of skills to make artistic designs for work in gold, silver, and bronze, to cut and set stones, to work in wood, and to engage in all kinds of crafts (Exod. 31:2-5). Many instances are seen when God specifically gave abilities to people to accomplish His plan and purpose. The human intellect can be improved by gaining experience and education. History tells that that humans have strived for improvements, innovation, and efficiency to make life better. There have been many technological advancements that did not exist earlier, and human intellect has a significant role in these developments. Humanity has experienced exponential growth in technology in the last few decades, and it continues to grow with humans achieving advancement in science and technology, which were not imagined in the past.

In Genesis, chapter 11 has the account of human effort to build the tower of Babel. The goal was to create for themselves a city, with a tower that reaches to the heavens, so that they may make a name for themselves. They did not want to be scattered over the face of the whole earth (Gen. 11:4). The Lord came down to see the city and the tower under construction.

> And the Lord came down to see the city and the tower, which the children of humans had built. And the Lord said, “Behold, they are one people, and they have all one language, and this is only the beginning of what they will do. And nothing that they propose to do will now be impossible for them. Come, let us go down and there confuse their language, so that they may not understand one another's speech.” (Gen. 11:5-7)

God wanted to stop the work and hence confused their language so they could not understand each other, and they got scattered over all the earth. There is an important

point to be noted in this incident. God is saying that if people join together as one and speak the same language, nothing they plan to do will be impossible for them. So, there is an admission that if people unite together and plan to do something, whatever they propose will be possible for them. This ability may be referring to the human potential to take actions that may not be the will of God. Humankind's united intelligence has excellent potential, and some of the technological breakthroughs are the result of many people contributing to a goal or project. Breakthroughs due to united human efforts should not be seen as omnipotence since the Bible teaches that human intellect is limited. "'No human mind has conceived' the things God has prepared for those who love him" (1 Cor. 2:9). The great intellects in the world will not be able to grasp the magnitude of God's work. At the same time, this can be seen as an indication of the enormous potential of the united intelligence of humans to create things that are not possible individually

Globalization is the phenomenon referred to, mostly in economics. It is the process by which economies, cultures, and societies have come together to bring the world to oneness through a global network of trade and communication. It has helped the advancement of society as a whole. Globalization is not a new idea, and when used in its economic connotation, it refers to the removal of trade barriers amongst nations to improve and increase the flow of goods across the world. It applies to almost all human endeavors today as almost all aspects of human life are globalized.[46]

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[46]J. Ola Ojo. "Is Globalization a Re-Enactment of One World Language in Genesis 11:1-9?," *Practical Theology*, vol. 6 (2013): 101, accessed December 15, 2019, EBSCOhost Atla Religion Database with Atla Serials Plus.

Many globalization efforts have sought to turn the peoples of the world into one corporate entity, incorporating the whole humanity into a single world society. The invention of the internet has provided humans with another opportunity to be united, and with the latest developments, language and geography cannot limit people from working together towards a common goal. The Internet has also been used as a vehicle to spread negative messages—like racist or nationalist propaganda. There are many open source and crowdsourced projects where people globally come together to work on initiatives that cannot be accomplished by a limited number of people. In a way, it can be seen as a situation similar to the time when the tower Babel was under construction.

The advancements in AI have been a result of the combined effort of people from many countries who speak different languages. There are many tools available that can easily translate any speech in real-time into many languages. The level of unity among humans in this aspect was never seen in the past to this extent. At Babel, the people were motivated by the spirit of pride and a compelling desire to make a name for themselves.[47] The unity of humankind may portend a false sense of power that could lead to a greater rebellion against God.[48] If it is to rebel, then God will put a limit as happened at Babel.

The united intellect of humans can accomplish a lot, but that should be used in a way that does not violate the commands of God. If it is used in a rebellious way or in a way that violates the principles given by the creator God, then humans will face the consequences, and intervention should be expected.

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[47] Ojo, "Is Globalization a Re-Enactment of One World Language in Genesis 11:1-9?," 101.

[48] Warren W. Wiersbe, *Be Basic* (Colorado Springs: Cook International, 2008), 136.

CHAPTER THREE: LITERATURE ON ARTIFICIAL INTELLIGENCE AND HUMAN RELATIONSHIPS

Introduction and History of AI

Technology is advancing fast, and wide adoption is taking less time. It took around ten thousand years to go from writing to the printing press, while it took only another five hundred for the email to become popular among the general public. According to Noah Berlatsky, the idea of AI has fascinated people for hundreds of years with the first science fiction novel, Mary Sheley's *Frankenstein* (1818), focused on a scientist who builds an artificial, intelligent creature.[49] The term AI was coined in 1956 by the American computer scientist John McCarthy, who defined it as "getting a computer to do things which, when done by people, are said to involve intelligence." AI can be defined as a broad area of computer science that makes machines seem like they have human intelligence. There is no standard definition of what constitutes AI, though, because there is a lack of agreement on what constitutes intelligence and how it relates to machines. Over the years, there have been many movies produced, which has captured the imagination of people about the possibility of super-intelligent robots that can perform tasks more efficiently and accurately than humans. There have been many movies depicting the relationship between humans and robots. Some movies have portrayed AI robots with limitations, while others have portrayed them as having

[49] Noah Berlatsky, ed., *Artificial Intelligence,* Opposing Viewpoints Series (Detroit: Greenhaven Press, 2011), 14.

emotional feelings and able to relate to humans like other humans. According to American computer scientist John McCarthy who coined the term AI, "Intelligence is the computational part of the ability to achieve goals in the world. Varying kinds and degrees of intelligence occur in people, many animals, and some machines." [50] Human intelligence includes capabilities such as logic, reasoning, conceptualization, self-awareness, learning, emotional knowledge, planning, creativity, abstract thinking, and problem-solving. A machine is generally considered to use AI if it can perform in a way that matches these abilities, which are in human intelligence. AI is categorized into three types. They are (a) Narrow or Weak AI, (b) General or Strong AI, and (c) Super AI.

Narrow or Weak AI

According to Joe Carter, "Narrow AI (or "weak AI) is the capability of a machine to perform a more limited number and range of intellectual tasks a human can do." Narrow AI can be programmed to "learn" in a limited sense but cannot understand the context. While different forms of AI functions can be put together to perform a range of varied and complex tasks, such machines remain in the category of narrow AI. Today there are many applications of narrow AI. This type of AI is not conscious, sentient, or driven by emotion the way that humans are. Narrow AI operates within a pre-determined, pre-defined range, even if it appears to be much more sophisticated than that. Google Assistant, Google Translate, facial recognition, speech recognition, Alexa, Cortona, Siri, and other natural language and image processing tools are examples of Narrow AI. The

[50]Joe Carter, "The FAQs: What Christians Should Know About Artificial Intelligence," The Gospel Coalition, April 18, 2019, accessed October 25, 2019, https://www.thegospelcoalition.org/article/the-faqs-what-christians-should-know-about-artificial-intelligence.

reason these are called “Weak” AI is that these machines are nowhere close to having human-like intelligence. They lack self-awareness, consciousness, and genuine intelligence to match human intelligence, and they cannot think for themselves. They perform the task they are designed to do and cannot perform anything beyond what they are programmed to do. AI can provide weather updates but cannot answer a question that is beyond the intelligence it is designed to operate and the dataset it has available. Sometimes machines can be made of many Narrow AI to perform more complex operations like driving a car. There are many benefits to this type of AI, as it is used to improve efficiency and accuracy.

Theories of human and animal intelligence are developed, and they are tested by building working models in software programs or robots. For Weak AI, these models are tools for understanding the mind.

General or Strong AI

According to Joe Carter, “General AI (or “strong AI”) is the capability of a machine to perform many or all of the intellectual tasks a human can do, including the ability to understand the context and make judgments based on it. This type of AI currently does not exist outside the realm of science fiction, though it is the ultimate goal of many AI researchers.”[51] Whether it is even possible to achieve general AI is currently unknown, and some researchers claim that it will be possible to have this type of AI. If it is achieved, such machines would likely not possess sentience (i.e., the ability to perceive one’s environment, and experience sensations such as pain and suffering, or pleasure and

[51] Carter, “The FAQs: What Christians Should Know About Artificial Intelligence.”

comfort). Currently, machines can process data faster than humans, but they cannot think abstractly, strategize, and tap thoughts and memories to make informed decisions or come up with creative ideas. This limitation makes machine intelligence inferior to the abilities humans possess. General AI is expected to be able to reason, solve problems, make judgments under uncertainty, plan, learn, integrate prior knowledge in decision-making, and be innovative, imaginative, and creative. For machines to achieve real human-like intelligence, they will need to be capable of experiencing consciousness. For Strong AI, the model has to be a mind.

Super AI

Oxford philosopher Nick Bostrom defines superintelligence as "any intellect that greatly exceeds the cognitive performance of humans in virtually all domains of interest."[52] This type of AI is supposed to surpass human intelligence in all aspects — from creativity to general wisdom, to problem-solving. These machines should be capable of exhibiting intelligence that is not seen in any humans. It is the type of AI that many people are worried about, and the type of AI that people like Elon Musk and Stephen Hawking think will lead to the extinction of the human race.[53] This type of AI does not exist today, but researchers predict it is possible in the future.

Principles or Laws of Robotics

AI is used extensively in robotics, and hence it is essential to review the principles or laws of robotics. There are different principles proposed for the robotics with AI. They

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[52] Tannya D. Jajal, "Distinguishing between Narrow AI, General AI and Super AI," *Medium*, May 21, 2018, accessed October 25, 2019, https://medium.com/@tjajal/distinguishing-between-narrow-ai-general-ai-and-super-ai-a4bc44172e22.

[53] Karphal, "Stephen Hawking Says AI. Could Be Worst Event in the History of Our Civilization."

have not been officially adopted or implemented by researchers and companies working on AI.

US AI Strategic Plan

On May 3, 2016, the US Administration announced the formation of a new National Science and Technology Council (NSTC) Subcommittee on Machine Learning and AI, to help coordinate Federal activity in AI. An AI Research and Development Strategic Plan was released, which identifies the following priorities for federally-funded AI research: [54]

1. Strategy 1: Make long-term investments in AI research. Prioritize investments in the next generation of AI that will drive discovery and insight and enable the United States to remain a world leader in AI.

2. Strategy 2: Develop effective methods for human-AI collaboration. Rather than replace humans, most AI systems will collaborate with humans to achieve optimal performance. Research is needed to create effective interactions between humans and AI systems.

3. Strategy 3: Understand and address the ethical, legal, and societal implications of AI. We expect AI technologies to behave according to the formal and informal norms to which we hold our fellow humans. Research is needed to understand the ethical, legal, and social implications of AI, and to develop methods for designing AI systems that align with ethical, legal, and societal goals.

[54] "National Artificial Intelligence R&D Strategic Plan," *NITRD*, accessed October 25, 2019, https://www.nitrd.gov/news/national_ai_rd_strategic_plan.aspx.

4. Strategy 4: Ensure the safety and security of AI systems. Before AI systems are in widespread use, assurance is needed that the systems will operate safely and securely, in a controlled, well-defined, and well-understood manner. Further progress in research is needed to address this challenge of creating AI systems that are reliable, dependable, and trustworthy.

5. Strategy 5: Develop shared public datasets and environments for AI training and testing. The depth, quality, and accuracy of training datasets and resources significantly affect AI performance. Researchers need to develop high-quality datasets and environments and enable responsible access to high-quality datasets as well as testing and training resources.

6. Strategy 6: Measure and evaluate AI technologies through standards and benchmarks. Essential to advancements in AI are standards, benchmarks, testbeds, and community engagement that guide and evaluate progress in AI. Additional research is needed to develop a broad spectrum of evaluative techniques.

7. Strategy 7: Better understand the national AI R&D workforce needs. Advances in AI will require a strong community of AI researchers. An improved understanding of current and future R&D workforce demands in AI is needed to help ensure that sufficient AI experts are available to address the strategic R&D areas outlined in this plan.

On February 11, 2019, United States President Donald Trump signed Executive Order 13859, announcing the American AI Initiative, the United States' national strategy on AI.[55] It shows that governments are taking the potential of AI seriously and realizing the need for policy to govern and initiatives to advance the use of AI.

[55] "Executive Order on AI," accessed October 25, 2019, https://www.whitehouse.gov/ai/executive-order-ai.

European Commission Ethics Guidelines for Trustworthy AI

European Commission had a high-level expert group present on ethics guidelines for trustworthy AI. According to the guidelines presented, a trustworthy AI should be (a) lawful- respecting all applicable laws and regulations, (b) ethical- respecting ethical principles and values, and (c) robust- both from a technical perspective while taking into account its social environment.[56]

Asimov's Three Laws of Robotics

Isaac Asimov was a famous and influential writer of robot stories. He came up with an ideal set of rules for machines to prevent robots from attacking humans but is not used by actual roboticists. These rules are Asimov's "Three Laws of Robotics" to govern the behavior of robots in his world.[57] They are:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.

2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.

3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

Principles for Designers, Builders, and Users of Robots

In 2011, the Engineering and Physical Sciences Research Council and the Arts and Humanities Research Council of Great Britain jointly published a set of five ethical

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[56] "Ethics guidelines for trustworthy AI," accessed December 28, 2019, https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai.

[57] Susan Schneider, *Science Fiction and Philosophy: From Time Travel to Superintelligence (*Hoboken, NJ: John Wiley & Sons, 2016), 297.

"principles for designers, builders, and users of robots" in the real world based on a September 2010 research workshop:[58]

1. Robots should not be designed solely or primarily to kill or harm humans.

2. Humans, not robots, are responsible agents. Robots are tools designed to achieve human goals.

3. Robots should be designed in ways that assure their safety and security.

4. Robots are artifacts; they should not be designed to exploit vulnerable users by evoking an emotional response or dependency. It should always be possible to tell a robot from a human.

5. It should always be possible to find out who is legally responsible for a robot.

Nadella's six principles for AI

Satya Nadella, CEO of Microsoft, put out the six principles and goals he believes AI research must follow to keep society safe.[59] Nadella's intentions are not a direct analog of Asimov's Laws. Nadella's principles are:

1. AI must be designed to assist humanity. Machines that work alongside humans should do dangerous work like mining but still "respect human autonomy."

2. AI must be transparent. People should have an understanding of how technology sees and analyzes the world.

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[58] "Ethical principles for Designers, Builders and Users of Robots," accessed December 28, 2019, http://www.historyofinformation.com/detail.php?id=3653.

[59] James Vincent, "Satya Nadella's rules for AI are more boring (and relevant) than Asimov's Three Laws," *The Verge*, June 29, 2019, accessed October 28, 2019, https://www.theverge.com/2016/6/29/12057516/satya-nadella-ai-robot-laws.

3. AI must maximize efficiencies without destroying the dignity of people. We need broader, deeper, and more diverse engagement of populations in the design of these systems.

4. AI must be designed for intelligent privacy. There must be sophisticated protections that secure personal and group information.

5. AI must have algorithmic accountability so that humans can undo unintended harm.

6. AI must guard against bias. Proper and representative research should be used to make sure AI does not discriminate against people as humans do.

AI Possibilities

One of the biggest challenges with AI is that strong AI does not exist today. It all depends on how different people define and understand intelligence. Philosophers and scientists disagree about whether the development of Strong AI is possible. Doug Merritt, the CEO of Splunk, recently stated that "AI does not exist today."[60] AI encompasses many types of technologies like ML (Machine Learning), Deep Learning, and Natural Language Processing (NLP). All of these are narrow forms of AI and do not work with each other. The original vision of AI, which goes back to the 1950s, is about systems that can truly learn about anything across any domain. Merritt said that it could be 50 to 100 years to get to AI, and there are many issues and challenges to work out, such as with computational power and energy. The human brain only uses 50 watts a day. It is also a very complex distributed system that has a high filter for intuition.

[60] Tom Taulli, "Splunk CEO: Artificial Intelligence Does Not Exist Today," *Forbes,* October 25, 2019, accessed October 29, 2019, https://www.forbes.com/sites/tomtaulli/2019/10/25/splunk-ceo--artificial-intelligence-does-not-exist-today/#1790af3de6a5.

The creation of machines that can think like humans have proved to be more difficult than anticipated initially. Vernor Vinge, a pioneer in AI, argues that sometime in the future, AI will surpass human intelligence, allowing for unimaginable advances.[61] He acknowledges that there are dangers in this scenario because robots may be immoral but conclude that overall advances in technology are much more likely to benefit humans than to destroy them. Artificial brains are not imminent since current brain simulations do not come close to imitating actual brain functions. According to John Horgan, scientists have little sense of how brains work and claim that computers will soon mimic human brain function is wishful thinking.[62] AI has several definitions, and the possibilities of AI depends on how intelligence is defined. Stuart J.Russell and Peter Norvig argue that computers can be considered to have achieved AI when they act like humans, when they think like humans, when they think rationally, or when they act rationally.[63] They note that "Most AI researchers take the weak AI hypothesis for granted, and do not care about the strong AI hypothesis—as long as their program works, they do not care whether you call it a simulation of intelligence or real intelligence."[64]

Turing Test

A Turing Test is a method of inquiry in AI for determining whether or not a computer is capable of thinking like a human being. The test is named after Alan Turing, the founder of the Turing Test and an English computer scientist, cryptanalyst,

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[61] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 20.

[62] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 25.

[63] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 49.

[64] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 18.

mathematician and theoretical biologist. Turing proposed that if a computer can mimic human responses under some particular condition, then it can be said to possess AI. The original Turing Test requires three terminals, each of which is physically separated from the other two. One terminal is operated by a computer, while the other two are operated by humans. During the test, one of the human's functions as the questioner, while the second human and the computer function as respondents.[65] The questioner interrogates the respondents within a specific subject area, using a specified format and context. After a preset length of time or number of questions, the questioner is then asked to decide which respondent was human and which was a computer. The test is repeated many times. If the questioner makes the correct determination in half of the test runs or less, the computer is considered to have AI because the questioner regards it as "just as human" as the human respondent.[66]

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[65] "Turing Test," *TechTarget*, accessed December 29, 2019, https://searchenterpriseai.techtarget.com/definition/Turing-test.

[66] Margaret Rouse, "Turing Test," *Search Enterprise AI*, June, 2019, accessed October 29, 2019, https://searchenterpriseai.techtarget.com/definition/Turing-test.

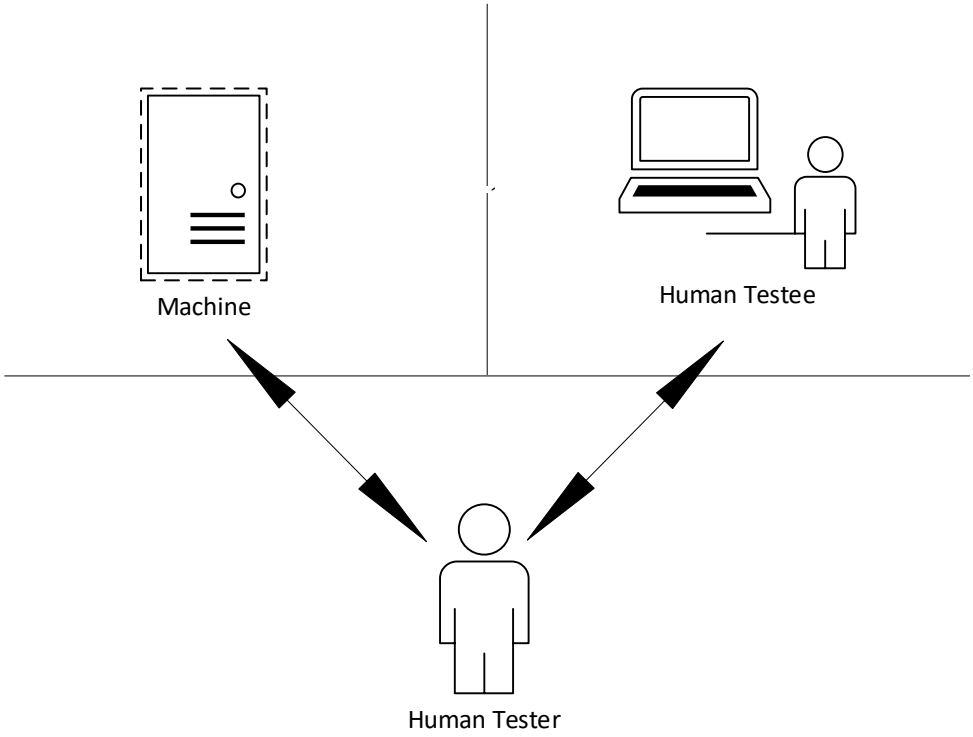

Figure 1: Turing Test

Virginia Savova and Leonid argue that the Turing test is a valid test of AI. They contend that a machine could not fake its way through the Turing Test in a manner that violates our intuitions about intelligence. They also contend that no look-up table could be composed to allow a machine to pass the Turing Test adequately.[67] Mark Halpern, a computer software expert who has worked at IBM, argues that the Turing Test is fundamentally flawed. During a Turing Test conducted in 1991, judging was flagrantly inadequate with computers that were providing responses were judged human, while

[67] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series, 68.

some humans were judged to be computers. He concluded that even if a computer were to pass the Turing Test, it would not show that they had achieved AI.[68]

Yaakov Menken, an orthodox rabbi, argues that despite significant advances in computer science, no computer has been created that even comes close to legitimately passing the Turing Test. Based on his observations and Jewish religious teaching, he concluded that human beings would never create a computer that can communicate with human intelligence.[69]

AI and Christianity

From the Christian perspective, there are different arguments about the possibility of AI and the implications when compared to the creation of humans by God. In April 2019, sixty evangelical leaders released a statement addressing AI. The Ethics and Religious Liberty Commission of the Southern Baptist Convention spent nine months working on "Artificial Intelligence: An Evangelical Statement of Principles," a document designed to equip the church with an ethical framework for thinking about this emergent technology.[70] The goal of this document was to help the church to think about AI from a biblical viewpoint. Leaders of many Christian institutions signed this document.

Russell C. Bjork is a professor of computer science at Gordon College in Wenham, Massachusetts, who argues that theologically that the soul may emerge from bodily processes.[71] He also argues that in Christian teaching, human specialness need not

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[68] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 78.

[69] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 99.

[70] "Artificial Intelligence: An Evangelical Statement of Principles," *ERLC*.

[71] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 30.

be based on what humans are, but rather on what God intends for them. As a result, an AI could have a soul and would not diminish the theological basis of human worth. Christianity's insights into intelligence may help to suggest how to achieve AI and what its limits might be. He further argues that "as is true throughout the sciences, work in AI can be wrongly motivated, but it can also represent a very legitimate part of humanity's fulfillment of the cultural mandate (Gen. 1:28) through enhanced understanding of the greatest marvel of God's creation: human beings. There is no inherent theological conflict between a biblical view of personhood and work in AI, nor would successes in this field undermine human value or the doctrine of the image of God."[72]

Harry Plantinga is a professor in the computer science department at Calvin College in Michigan who argues that faith affects how Christian computer scientists approach their work.[73] The faith can lead Christian computer scientists to the recognition that the soul, rather than material computational abilities, separate human beings from machines. Their faith affects the ethical choices made by Christian scientists. Computer science is a discipline with two aspects. On the one side, it is an engineering discipline: it involves the planning, design, construction, and maintenance of computer systems. The subject matter is a corpus of techniques to analyze problems, constructing solutions that will not collapse, guaranteeing, and measuring the robustness of programs.

On the other hand, it is also a science in the sense that mathematics is a science. It is the study of computation and computability, the study of the algorithm. Christian

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[72] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series, 41.

[73] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series, 42.

computer scientists and engineers should approach AI in an attitude of doxology and service. They must be careful to honor God in what they do and find that in loving God, they love others, and in serving others, they serve God. All problem-solving, including AI, must be addressed through the motivation of service, and the systems should be reliable, easy to use, and helpful to honor God. Social and ethical implications of the work should be considered, and beneficial aspects of computing must be pursued.[74]

AI cannot attain the image of humanity seen in the Bible. There may be robots that may be similar in looks or speech. To treat AI as a human is to undermine what it means to be human.

More Efficient or Human Society

The united intellect of humans can accomplish many things, and it should be used in a way to replace humans to perform various tasks that may not be suitable for them to do. The impact of AI replacing human workers is already happening in many industries, and loss of jobs is a real concern. Work is part of God's plan for human beings participating in the cultivation and stewardship of creation. The divine pattern is one of labor and rest in a healthy proportion to each other. AI can be used in ways that aid human work or allow them to make fuller use of their gifts. There is a possibility that humanity will use AI and other technological innovations as a reason to move toward a life of pure leisure.

AI replacing human work will mean fewer people working together. As a society, this could mean moving towards a more efficient society than a human society. If people

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[74] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 48.

start interacting more with robots and marrying them, this will impact the fabric of human society.

Impact of AI on Society

Narrow or weak AI has already impacted how humans interact with each other, share information, and how they access information. Home automation, including security, has been achieved using AI, and it is being used now in health care and other industries, which have proved to be very beneficial to society. There are many ethical issues raised by AI.

Eliezer Yudkowsky suggests that AI researchers need to focus on producing humane AI, which he calls Friendly AI. He says that if AI researchers create intelligence without morality, the super-intelligent AI could threaten humanity. The advances in computing power and nanotechnology mean that the creation of inhumane AI is a real possibility.[75] The issue with viewing AI as humane or inhumane that machines cannot be considered moral or immoral. Humane or inhumane would not be an inherent characteristic of the AI itself. AI could be humane or inhumane only in the sense that it produces a positive or negative impact on humankind.

Noel Sharkey argues there is no evidence that machines can attain human intelligence, and he is concerned that people want so much to believe in AI that they will start to think that robots can replace humans in some jobs. This can create serious ethical problems if robots are used in elder care or military capacities.[76] Shoichi Hamada of the Japan Robot Association counts at least twenty companies working in the elderly-care

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[75] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 126.

[76] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 135.

robot field to create inanimate caregivers. An important question to ask is whether it is good to let machines be caregivers, and many say that people should be looking after other people. He reminds the fact is that there will be more people who need care, and fewer people to provide it.[77]

Regarding the question of AI being considered a moral agent, John P. Sullins III, a member of the philosophy department of Sonoma State University in California, argues that robots could, in some situations, be considered moral actors. He says that a robot would not have to reach the level of human consciousness to be considered a moral agent. As long as a robot is autonomous, behaves in a way that suggests intentionality, and fulfills a social role that includes responsibilities, it should be thought of as having some moral agency. He concludes that even robots existing today may be considered moral agents in a limited way, and should be treated as such.[78] A "moral agent" typically would have both responsibilities to others and will be accountable when they do not fulfill those, and have rights from others. Others could be held responsible for failing to treat them morally. A robot that hurts a human being cannot be put in prison. The programmer or the creator of AI will be responsible.

Joanna J. Bryson, a professor in the department of computer science at the University of Bath in the United Kingdom, argues that humans have no more ethical responsibilities to robots than they do to any other tool. She suggests that humans have a tendency to grant agency and consciousness to robots for psychological and social

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[77] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 139.

[78] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 141.

reasons, and it is a waste of time and energy, which are precious commodities for human beings. She concludes that more effort should be made to inform people that robots are not people or even animals, and therefore have no ethical standing.[79]

AI military robots are already in use and argue that it could be programmed to act more ethically than people. In certain situations, robots can be better than humans, and hence, the focus should be on creating robots that will act ethically. Some think that AI may dangerously change warfare as robots used in warfare will not have feelings. The U.S already has deployed a few thousand robots, chiefly UAVs, in Iraq and Afghanistan.[80]

AI-enabled smart cars are already tested and used and could have a significant impact on the society and automobile industry. These self-driving cars can increase the safety of passengers but raise other challenges regarding liability and decision making in situations that cannot be programmed easily or which may not have happened in the past.

AI has tremendous power to enhance spying on people, and both authoritarian governments and democracies are adopting the technology as a tool of political and social control. In Chinese cities, facial recognition is used to catch criminals in surveillance footage, and to publicly shame those who commit minor offenses.[81] AI-powered sex robots are becoming more advanced, and companies are pushing for people to buy AI-powered devices. People are using AI-based applications and devices regularly. Personal

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[79] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 155.

[80] Berlatsky, *Artificial Intelligence,* Opposing Viewpoints Series*,* 188.

[81] Will Knight, "Artificial Intelligence Is Watching Us and Judging Us," *Wired*, December 1, 2019, accessed January 10, 2020, https://www.wired.com/story/artificial-intelligence-watching-us-judging-us/.

assistances like Alexa and Google Home are now common in most houses, and people talk and address them as other humans.

Bias in AI

Humans have many biases, and any tool created by humans can have bias inbuilt. AI will be inherently subject to bias as data generated by humans is utilized by algorithms. These biases must be accounted for, minimized, or removed through continual human oversight and discretion. It is a challenge to design and use AI in such a way that it treats all human beings as having equal worth and dignity. AI should be utilized as a tool to identify and eliminate bias inherent in human decision-making. AI systems are only as good as the data it is provided. Bad data contain implicit racial, gender, or ideological biases, and many AI systems will continue to be trained using these data, which makes this as an ongoing problem. Bias in AI does not come from the algorithm being used but from people.

Back in 2015, Jacky Alciné, a software engineer, pointed out that the image recognition algorithms in Google Photos were classifying his black friends as "gorillas." Google said it was "appalled" at the mistake, apologized to Alciné, and promised to fix the problem.[82]AI should not be designed or used in ways that violate the fundamental principle of human dignity for all people.

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[82] James Vincent, "Google 'fixed' its racist algorithm by removing gorillas from its image-labeling techs," *The Verge*, January 12, 2018, accessed October 28, 2019, https://www.theverge.com/2018/1/12/16882408/google-racist-gorillas-photo-recognition-algorithm-ai.

Human and Machine Relationship

According to Zara Stone, "On October 25, 2017, a delicate-looking woman with doe-brown eyes and long fluttery eyelashes made international headlines." [83] Sophia, a robot, was granted full citizenship of Saudi Arabia, the first robot in the world to achieve such a status. Sophia's announcement was a calculated publicity stunt to generate headlines. A Chinese man married a robot he built himself.[84] Companies are selling AI sex robots that integrate internet technology, interactive voice system, sensing technology, mechanical and electrical integration technology.[85] The pursuit of sexual pleasure is used as justification for the development and use of AI, and it is used for sexual purposes. AI started to become better with the use of machine learning techniques. The recent AI boom is triggered by the use of the deep learning technique, a type of machine learning that trains a computer to perform tasks that are typically done by humans. It includes speech recognition, image identification, and predictive analysis. The data is not organized to run through predefined equations. The deep learning sets up basic parameters about the data and is used to train the computer to learn on its own by recognizing patterns using many layers of processing. Many practical applications of AI

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[83] Zara Stone, "Everything You Need to Know About Sophia, The World's First Robot Citizen," *Forbes*, November 7, 2017, accessed October 29, 2019, https://www.forbes.com/sites/zarastone/2017/11/07/everything-you-need-to-know-about-sophia-the-worlds-first-robot-citizen/#1367f7ec46fa.

[84] "Chinese man 'marries' robot he built himself," *The Guardian*, April 4, 2017, accessed October 29, 2019, https://www.theguardian.com/world/2017/apr/04/chinese-man-marries-robot-built-himself.

[85] "About Us," *Robot Companion*, accessed October 30, 2019, https://www.robotcompanion.ai/about-us.

came to the mainstream as a result of the use of deep learning techniques.[86] The topic of posthumanism and transhumanism are important in AI discussions. Scott A. Midson discusses this topic and states that,

> Closer analysis of the teleology of transhumanism, however, reveals a concrete vision of the movement that can be regarded as slightly yet significantly different to the undergirding substantive interpretation of the human. While this foundational assumption of human nature can be used to link Christianity, humanism and transhumanism, the transhumanist vision of the future reveals a more nuanced understanding of the human that may compete with the Christian eschatological vision.[87]

The ultimate goal of transhumanists is to use technology to bring a mostly humancentric utopia in which humans are fundamentally changed and may not be regarded as humans in the sense it is understood today.

Noreen L. Herzfeld addresses the issue of human and computer relationship. If robots turn toward humans and elicit from humans a relational response, does this constitute an authentic human-computer relationship? While robots may engage their human counterparts in speech, it is quite clear that they cannot engage in the reciprocal self-declaration for real encounters. Moreover, Herzfeld states that "mutual aid and intentionality remain distant dreams. Any relationality that humans exhibit toward computers in their current state of development is mere projection and anthropomorphism, no different than the fact that many people talk to their cars or

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[86] Michael Copeland, "What's the Difference Between Artificial Intelligence, Machine Learning and Deep Learning?" *NVIDIA*, July 29, 2016, accessed October 29, 2019, https://blogs.nvidia.com/blog/2016/07/29/whats-difference-artificial-intelligence-machine-learning-deep-learning-ai.

[87] Scott A Midson, *Cyborg Theology: Humans, Technology and God* (London: I.B. Tauris, 2018), 76.

become angry at desktop monitors when the system crashes." [88] Everyone recognizes in their hearts that these are not authentic relationships, and these are not real.

The human-computer relationships will never be analogous to, nor an adequate substitute for, human-human relationships because humans and computers lack the common ground of a relationship with God on which to meet. A relationship with God provides the basis for a mutual self-disclosure and aid that can be understood and accepted.

Conclusion

AI has gained popularity in recent years, and the usage has gone up way more than the general public is realizing. Just like exponential technological advancements seen in recent years, the AI applications have also grown. Many technology companies are pursuing AI and looking for ways to incorporate it to automate business processes.

According to James Vincent, AI Research and Development are booming, but general intelligence is still out of reach. After reviewing the AI Index 2019 Annual Report, he has highlighted the main trends with AI.[89] AI research has gained much momentum, and "Between 1998 and 2018, there has been a 300 percent increase in the publication of peer-reviewed papers on AI. Attendance at conferences has also surged; the biggest, NeurIPS, is expecting 13,500 attendees this year, up 800 percent from 2012." AI education is also growing, with over twenty-one percent of computer science PhDs as related to AI. AI algorithms are also becoming faster and cheaper to train. The report

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[88] Herzfeld, *In Our Image: Artificial Intelligence and the Human Spirit*, 91.

[89] Raymond Perrault, Yoav Shoham, Erik Brynjolfsson, Jack Clark, John Etchemendy, Barbara Grosz, Terah Lyons, James Manyika, Saurabh Mishra, and Juan Carlos Niebles, *The AI Index 2019 Annual Report* (Stanford, CA: AI Index Steering Committee, Human-Centered AI Institute, 2019).

finds that "The AI Index team noted that the time needed to train a machine vision algorithm on a popular dataset (ImageNet) fell from around three hours in October 2017 to just 88 seconds in July 2019. Costs also fell, from thousands of dollars to double-digit figures." Private investment in AI-related research has also increased. He concluded that,

> When thinking about AI limitations and promises, it's good to remember the words of machine learning pioneer Andrew Ng: "If a typical person can do a mental task with less than one second of thought, we can probably automate it using AI either now or in the near future." We're just beginning to find out what happens when those seconds are added up.[90]

General AI is still not there. There are many benefits of AI, which have been realized in many fields and noticeably in medical science. Robots are used in performing surgery. Recently there was a report of AI systems outperforming medical experts in spotting breast cancer. Software developed by Google Health could make breast screening more effective and help in places there is a shortage of radiologists.[91] Later another report came out, which highlights the issue with such systems. A new study from Google seems to show the promise of AI-assisted health care, and it shows the threat as well. This study concluded that AI makes bad medicine even worse.[92]

As the use of AI is increasing in daily life, there are ethical and relational issues that the church and ministers cannot ignore. As the researcher had some conversion with

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[90] James Vincent, "AI R&D is booming, but general intelligence is still out of reach," *The Verge*, December 12, 2019, accessed December 29, 2019, https://www.theverge.com/2019/12/12/21010671/ai-index-report-2019-machine-learning-artificial-intelligence-data-progress.

[91] Ian Sample, "AI system outperforms experts in spotting breast cancer," *The Guardian*, January 1, 2020, accessed January 5, 2020, https://www.theguardian.com/society/2020/jan/01/ai-system-outperforms-experts-in-spotting-breast-cancer.

[92] Christie Aschwanden, "Artificial Intelligence Makes Bad Medicine Even Worse," *Wired*, January 10, 2020, accessed January 10, 2020, https://www.wired.com/story/artificial-intelligence-makes-bad-medicine-even-worse.

few ministers before starting this project, it was evident that the church at large needs to be made aware of the issues raised by AI and how to respond to the questions raised by the younger generation. One person made the comment that at the end of the day, a computer has to be unplugged to stop AI. With the biblical and literature review of literature conducted in this project, it is evident that the issue of AI is of unplugging a computer. As AI augments humans and the capability of machines, it is essential to set limits and have strong policies per the commands given by God in the Bible. Any advancements which are in rebellion to God's law and intent for humans will result in a judgment and undesired consequences. Therefore, there is a need for a biblical framework to address some of the challenges posed by AI.

CHAPTER FOUR: PROJECT DESCRIPTION AND RESEARCH METHODS

Project Overview

The purpose of this project was to gain a clearer understanding of why there is much interest in AI and why some people are concerned and issuing warnings. Another goal was to understand if it will have an impact on the Christian faith. The challenges related to AI was evaluated from a biblical and theological viewpoint. Since AI is still an emerging technology, new information was coming almost daily. The researcher subscribed to newsfeeds and podcasts related to AI and could clearly understand that many things are happening in this field, and many ideas are being presented. Many researchers are very optimistic about the potential and future of AI, while others are not thinking about it beyond what a piece of technology can do. The AI advancements are going to have an impact on society, and some of them stand in contrast to what the Bible teaches.

This project had a series of planned steps, with most of them happening linearly while some happened in parallel. The researcher was aware of AI for a long time but has come across literature materials that took it to a level that had implications on personal faith. From seeing AI as a technology, there is much news regularly coming where AI is viewed as something more than how people typically view technology. Then the researcher came to know about the church of AI. There have been many technological advancements, but nothing has captured the imagination of humans who are aware of this like AI. There were also warning issues by Stephen Hawking and Elon Musk about the

dangers of AI. The researcher also attended a technology conference where there was personal consultation time arranged with industry experts on AI. All of this left the researcher with many questions that needed to be addressed for personal benefit as well for the benefit of many who may be looking for answers.

The scope of this project was to focus on the creator God of the Bible, Humans, and AI to address the theological and relational issues. The research methods focused on discovering potential issues and developing a framework to address these issues.

Research Methodology

The project research used qualitative research methodology. The qualitative research is recommended when the research has to "focus on phenomena that occur in natural settings- that is, in the "real world" and "when they involve capturing and studying the complexity of those phenomena."[93] The qualitative designs used was a case study and grounded theory study. The primary methods of data collection were observations, interviews, surveys, and written documents. There was no change made to the research method from the initial project design.

Biblical and Theological Review

The first step taken in this project was to review the biblical and theological literature related to the study to create a biblical-theological framework for understanding topics related to AI. This step began with the analysis of various biblical topics that could be related to AI and to identify what is essential to focus on this project. A broad survey

[93] Paul D. Leedy and Jeanne Ellis Ormrod, *Practical Research: Planning and Design,*10th ed. (Boston: Pearson, 2013), 139.

of biblical passages related to the topic was done to be used in an in-depth review. Various biblical and theological literature related to the topics were also reviewed.

The first focus was on the attributes of God. It was essential to lay a foundation to understand who God is and what are some of the attributes which set him apart from all of creation. Some people compare AI with god and even go to the extent of thinking if humans can create AI which can function like humans, will it make them like God. Out of all the attributes of God found in the Bible, eight attributes were selected for an in-depth study. The goal was not to study an attribute itself, and hence comparisons between what different theologians have written about each attribute were not made. This survey relied a lot on *Systematic Theology* by Grudem, while many other writings on attributes were used and referenced. To not lose the focus from the main topic of the project, the review of attributes was kept at a level to provide an overview and a summary of how it is relevant to the topic of AI.

The next focus in this section was on the humans who are created in the image of God. As robots with AI are made to look and function like humans, a study was conducted to understand why the image of God in humans is unique and the reason why it cannot be imparted to a machine. There is much AI-related technology today, which is proposed to be assigned a level of human identity, worth, dignity, or moral agency. It was relevant to understand what the Bible has to say about thinking about machines in the same way as humans who are created in the image of God.

The next focus was on human relationships with God and other humans. Relationality is one area AI has succeeded in making an impact to a large extent. AI has proven good with decision making within a limited scope. Virtual agents and the ability

to communicate with humans have made many people seek friendship and relationship with machines more than other humans in some scenarios. The level of interaction between real humans has reduced, while human interaction with AI has grown in recent years. There are reports of people marrying robots and robots being used in brothels as prostitutes. With the divorce rate going up and the number of people getting married declining, AI is positioned to fill the space left due to a lack of human interactions and relationships. The focus was on the relational aspects of humans as it is given in the Bible.

The next focus in the biblical review was on the creations of humans who are created by God. The concept of co-creators was explored in this review. The difference between God's creation and man's creation was explored.

This section ended with a review of the potential of united human intelligence. The focus was on Genesis Chapter 11 and the text related to God's reaction to the building of the tower of Babel. The concepts of globalization and open source projects, and how it is bringing humanity together once again while overcoming the language differences were also reviewed. Other biblical topics were also considered, and initial reviews were done but were not included in the project to maintain the focus on AI-related issues.

Literature Review

The second step was to review relevant, contemporary literature related to the AI. The researcher found that there is much news about AI coming daily and much research being done in computer science. There have been some statements being released on AI by Christian organizations in recent years. The researcher found only one Christian

researcher who had been writing about AI and related theological issues for more than ten years.

The first focus in this review was on the history of AI. The different types of AI were reviewed, and various viewpoints of reviewed. The next focus was on the principles and laws of AI and robotics. There are no legal laws regarding AI, but some organizations and individuals have proposed some policies to govern AI to avoid potential dangers. It was essential to understand the negatives impacts of AI.

The next focus was on the possibilities of AI. There are many claims, but it is essential to evaluate how many of them are real and how far technology can go in this aspect. Then the focus was on understanding the Turing test and the relevance of such tests to understand the scope of AI and how to distinguish between AI machines, which will do certain functions and ones that are supposed to exhibit intelligence like humans.

The next focus was on AI and topics related to Christianity. The responses of Christian leaders to AI were reviewed. Some of the questions reviewed included if Christianity sets limits to AI, should AI be considered a moral agent, and how Christian scientists should approach their work. The question of whether humanity needs a more efficient or more human society was reviewed.

The next focus was on the impacts of AI on society and the bias in AI. The issues related to bias was reviewed. The final focus was on human and machine relationship. The literature on dimensions of human relationships was reviewed along with recent AI developments, which could take humanity in a direction where there will be fewer real interactions between humans and how it could impact the society was reviewed.

This step concluded with the summary analysis of all literature and the need for policies to avoid the misuse of AI. The need for a theological framework to address the questions raised by AI was derived as part of the conclusion of literature reviews.

Survey Design

The next step in the project was to gather information from Christian college students, between the ages of 18-34, to understand their views and challenges associated with technological advancements and AI. The researcher developed twenty questions with fourteen questions related to the topic of the project. Six questions were related to demographics and optional personal information to receive the project summary. The thesis advisor reviewed the survey questions. The suggested recommendations were incorporated. All the projects related questions in the survey was closed. In closed questions, "selected answers are given; from these, the respondent must choose."[94] Respondents were asked to pick from a range of answers or asked to agree or disagree with a statement. The survey questions are included in Appendix A.

Selecting the Survey Audience

The targeted audience for the survey was Christian college students, between the ages of 18-34 from different countries. Many technological advancements are happening in Asian countries, and hence the survey was not targeted for the audience from the USA only. The researcher gives leadership to a student ministry that has operations in many countries. USA, Cambodia, Myanmar, Sri Lanka, and Nepal were selected as countries to conduct this survey among selected students. The survey was sent to the staff workers of

[94] Nancy J. Vyhmeister and Robertson Terry Dwain, *Your Guide to Writing Quality Research Papers for Students of Religion and Theology*, 3rd ed. (Grand Rapids, MI: Zondervan, 2014), 38.

the organization to be provided to students who are Christians and who are actively participating in different programs conduction by the organization.

Survey Completion

The survey was distributed using the Qualtrics tool. The functionality available within the tool was used for coding and evaluation. The survey was made available from September 5, 2019, to October 2, 2019. One hundred and forty-nine people took the survey from seven countries.

Survey Data Synthesizing

After the conclusion of the survey, the data was organized to make an overall sense of the data and was grouped into different themes. Later it was synthesized to construct tables and graphs.

Interview Design

The next step in the project was to conduct interviews gathering information from different groups of people to understand how they view AI and the challenges encountered. Three groups of people were selected for the interview. The first group consisted of Christian ministry leaders and pastors. The second group consisted of Christians who are either doing work with AI or have good knowledge about the subject. The third group was Information technology professionals who are not Christians but have knowledge of AI. The researcher developed sixteen questions for the interviews with ministry leaders and twelve questions for other groups. The survey questions were reviewed by the thesis advisor and suggested recommendations were incorporated. All the questions in the interview were open. For open questions allow “respondents to answer, without prompting, however they wish. Because answers vary so greatly, the

tabulating of open answers is long and involved."[95] Most of the interviews were audio-recorded with the permission of the participants.

The interview responses were also captured in Microsoft OneNote to help with coding. At data coding process started with the researcher studying the collected interview data many times, which helped in comprehending the data in depth. It provided the confidence required to code the data. The data was examined along with the information gathered through biblical and literature review to analyze the participant's perceptions and views. It was evident during the coding phase that there were many data points and topics to be analyzed from the interviews. The researcher focused on the essential categories which are most relevant to this project and categorized the data. The responses were placed in different categories, and related themes were identified. Themes that were not relevant to this project were added to a different category to be considered for future research. As the process continued, the researcher reached the point of data saturation. The data coding was stopped at that point because the researcher did not observe new themes emerging from the analysis.

Interview Participants

An invitation was sent to about thirty participants, and twenty-two accepted the invitation and scheduled time for the interview using Calendly scheduling application. The interview participants ranged in age from 24 to over 60 years. The interview questions are included in Appendix B, C, and D. The following are descriptions of the

[95] Vyhmeister and Dwain, *Your Guide to Writing Quality Research Papers for Students of Religion and Theology*, 39.

participants. These individuals were given the assurance that they will remain anonymous; therefore, the names provided below are pseudonyms.

Pastors and Ministry Leaders

In the project proposal, the plan was to interview five pastors. As the researcher found that many pastors are not familiar with AI, the invitation was extended to more leaders and pastors to get a larger dataset. Ten ministry leaders and pastors attended the interview.

The first interview was with Johnson, who serves as an Associate Research Fellow at a prominent Christian organization. He is also the author of a book on AI written from a Christian perspective to bring awareness about different topics on AI. He writes and speaks on various topics, including ethics, human dignity, technology, and artificial intelligence. Renowned Christian magazines and publications have featured his writings. The interview was conducted on October 23, 2019, using the Zoom video. The researcher introduced the study and asked the questions. It was evident that Johnson has an in-depth knowledge of both AI and theology, and the interview went little over the time scheduled. Because of the insights and topics discussed, Johnson willingly gave extra time to complete all the questions.

The second interview was with Titus and was conducted on October 23, 2019, using the Zoom video. Titus is the Online Pastor at a megachurch in Midwest and has been in full-time ministry for the past seventeen years. He has worked primarily as worship or creative pastor and campus pastor in both single-site and multi-site churches, having occupied positions with different campus teams and on central leadership teams. In a typical week between Sunday to Wednesday, the online content published by Titus

and his team reaches about fourteen thousand people. He was very familiar with AI and had a lot to share about the use of technology in ministry.

The third interview was with Matt, the senior Pastor of a growing church in India. He also gives leadership to other ministries who are engaged in training and sending missionaries to new mission stations. Matt travels a lot to preach and has been to many countries. He was visiting the USA, and the researcher got the opportunity to conduct the interview personally on October 23, 2019. Matt has good knowledge about technology and was able to provide details about technology related challenges faced by pastors and leaders in India.

The fourth interview was with Luther, the senior Pastor of a church in Dallas with membership mostly consists of immigrants, both first and second generation. He also works as a Social Worker manager at a leading medical institution. Luther is a resource person who is in high demand among his community for preaching, conducting seminars, and doing counseling. He had good exposure to AI as robots are used for performing surgery in the institution he works. The interview was conducted via the Zoom video on November 11, 2019.

The fifth interview was with Ken, who is the General President of a church organization with more than two thousand churches worldwide. Before assuming this responsibility, he was the senior pastor of a local congregation and the national president of the organization. He also works as a Clinical supervisor at the state union-based Employee Assistance Program and handles patients who are dealing with different types of addiction. The interview was conducted via phone on November 19, 2019.

The sixth interview was with Bob, the Spiritual Formation Pastor at a multi-site church. He had good exposure to challenges faced by people with technology addiction and also worked as Spiritual Director. The interview was conducted via the Zoom video on November 21, 2019.

The seventh interview was with Charlie, a senior pastor at a church in New York. His father was also the senior pastor at the same church before him. He is focusing on reaching out to the community and making the church multi-cultural. Charlie is a resource person who is in high demand among his community for preaching and preaches at leading youth conferences. The interview was conducted via the Zoom video on November 21, 2019.

The eighth interview was with Randy, who has recently moved to a new city and started a church. He has spent many years doing ministry in his home country and also held pastoral responsibility at a church in the Middle East. He also teaches at a Bible College and interacts with many people. The interview was conducted via the Zoom video on November 25, 2019.

The ninth interview was with Spencer, Senior Pastor of a large church in Southwest. He has a youth or English Pastor in his leadership team but continues to minister to young and older people. Spencer has researched addictions related to technology and has a basic knowledge of AI. The researcher took the interview via the Zoom video on November 27, 2019.

The tenth interview was with Joel, who has worked as a youth pastor and director for many years. Currently, he works as Staff Minister for a Student Ministry and interacts with students and other staff members. He had less knowledge about AI specifically but

was well aware of the challenges and issues faced by Christian students. He had access to surveys conducted by his organizations among middle and high school students. The researcher took the interview via the Zoom video on November 27, 2019.

Christians with AI Experience

The eleventh interview was with Ruth, professor of theology and computer science at a university. The researcher found the interview with Ruth very beneficial for this project as she has written about theology and AI for many years and has published many books. The researcher took the interview via the Zoom video on October 18, 2019.

The twelfth interview was with Tony, taken via the Zoom video on November 21, 2019. Tony works as Director of Mental Health Evaluation Department and is an Instructor in Psychiatry. He is also the founder president of a non-profit organization that focuses on strengthening families and marriages and bringing awareness about challenges faced by the current generation. Tony oversees two AI-related projects at his workplace and has in-depth knowledge about the use of robots. The researcher found the interview with Tony to be very beneficial in understanding the current research related to AI conducted in the medical field.

The thirteenth interview was with Victor, a businessman who is also a Vice President in a student ministry. Victor travels a lot and is a technology enthusiast and hence is an early adopter. The researcher took the interview via the Zoom video on November 26, 2019.

The fourteenth interview was with Samuel, who works as Supply Chain, Logistics, Distribution Systems Solutions, and Transformations Leader. Samuel regularly

sees the adoption of AI at his workplace. The researcher took the interview via the Zoom video on November 26, 2019.

The fifteenth interview was with Fedrick, who works as a Software Engineer. He has started developing AI programs and was successful in implementing a new program which can predict outcomes based on past trend, which helps the business make decisions. He is also the leader of a mission organization engaged in sending and supporting missionaries. The researcher took the interview via the Zoom video on November 27, 2019.

The sixteenth interview was with Johan, who completed his studies in computer science a few years ago and currently works at an insurance company. Johan keeps track of the latest technology developments and reads a lot about technology and the latest trends. He also volunteers at his church and is involved with different ministries within the church. The researcher took the interview via the Zoom video on December 2, 2019.

IT Leaders or Professionals

The seventeenth interview was with Adam, who runs the IT department at a large financial agency. Currently, Adam is overseeing more than one project related to AI. The researcher took the interview via phone on October 11, 2019.

The eighteenth interview was with Esau, who works at a financial agency. He is currently not working on any AI-related projects but has exposure. The interview was personally conducted in Chicago when the researcher met with Esau during a conference on November 6, 2019.

The nineteenth interview was with Abel, who works as Assistant Vice President of the IT department at a financial agency. The researcher took the interview via the Zoom video on November 12, 2019.

The twentieth interview was with Philemon, who works as a Software Engineer. He is currently not working on any AI-related projects but knows the latest developments. The researcher took the interview personally on December 3, 2019.

The twenty-first interview was with Richard, who works as CIO of a company. Currently, the team working under Richard is doing AI-related projects to solve business problems. The researcher personally interviewed Richard on December 5, 2019.

Conclusion

The researcher conducted literature reviews and conducted a survey that was completed by one hundred and twenty-eight participants. Twenty-one personal interviews were also conducted to get enough data to allow the researcher to understand the perspectives of people who are familiar with AI. The interview participants included published authors of AI-related books and journals. Interviewees also included pastors from main churches who are using different technology in their church services to engage people. The data collected from surveys and interviews was beneficial in understanding the positives side and challenges with AI.

CHAPTER FIVE: DATA TREATMENT AND ANALYSIS

The focus of the research was to understand the impact of AI on Christian students, Christian leaders, and those who work with AI. In qualitative research, "the interpretation of the data will inevitably be influenced by the researcher's biases and values to some extent."[96] The data from the survey and the interview was collected to do the analysis. The researcher has been doing ministry and is also working in the technology field, with some work being done with AI. There are prior opinions and expectations which had to be kept away from being added to the final analysis. The data has been treated as it is received, and analysis has been done based on data collected. The responses from partially completed surveys were not included in any analysis of the data.

Survey Participant Demographics

The researcher sent the survey to targeted audiences, and one hundred and forty-seven participants took the survey. Eight participants did not give consent and chose not to participate. Twenty-eight participants did not complete the survey, and hence the partially completed responses were excluded from the results.

The following chart shows the country of the participants.

[96]Leedy and Ormrod, *Practical Research: Planning and Design*, 139.

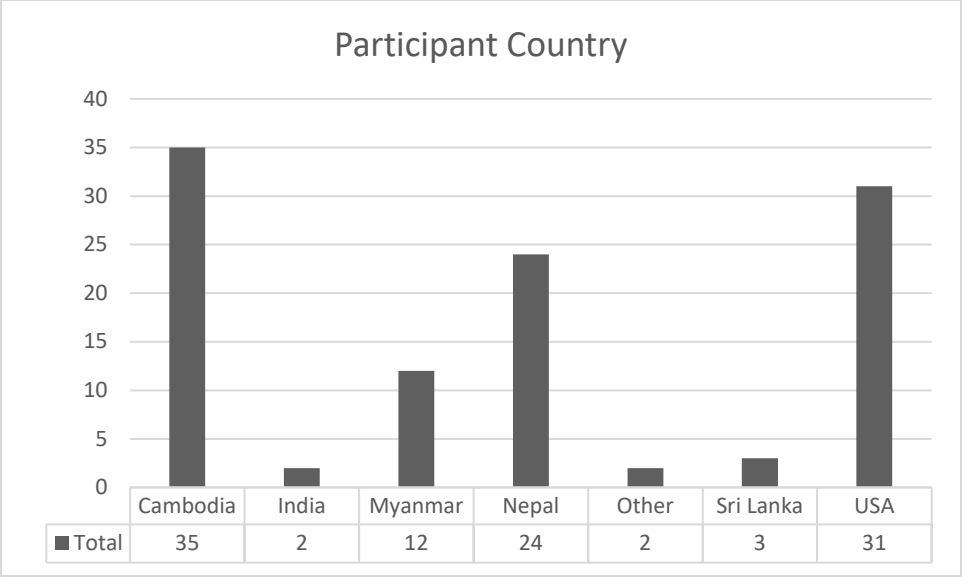

Figure 2: Survey participant's country.

As the survey was sent to participants from different countries, they were asked to identify their countries. The results showed that the survey also went out to participants who were not initially targeted. The researcher did not send the survey to any participants in India directly. However, it may have been forwarded by someone from another country who had been approached to distribute it to students. There was a total of thirty-five participants from Cambodia, thirty-one from the USA, twenty-four from Nepal, three from Sri Lanka, two from India, and two from other countries.

The survey was intended to be taken by Christians, and hence the next question was about faith. The participants were asked if they are Christians. The following chart shows the response to the question.

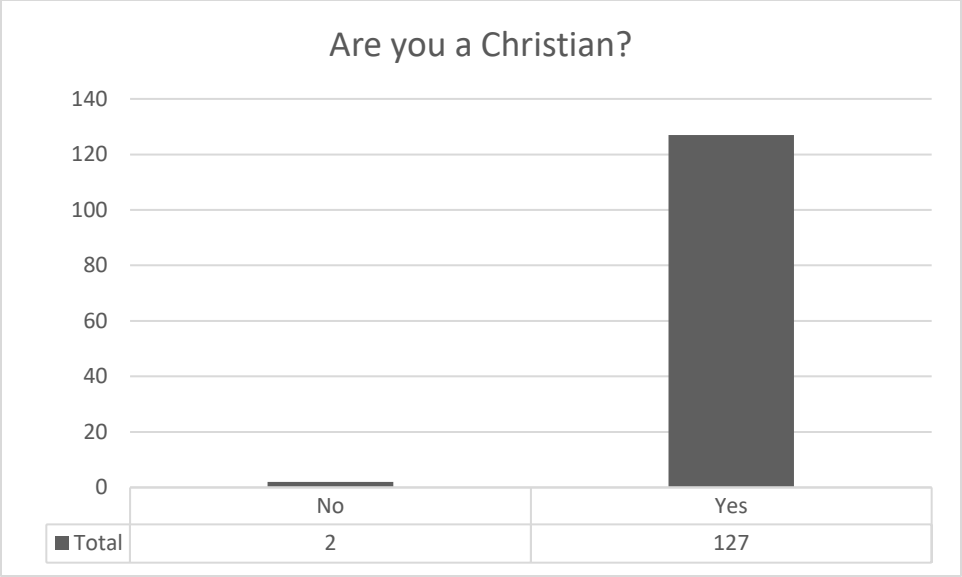

Figure 3:Are you a Christian question response.

One-hundred and twenty-seven respondents who completed the survey confirmed that they were Christians. There were only two participants who completed the survey and responded that they were not Christians. These two participants were from Cambodia, and the researcher is assuming that these are students who are attending Bible study and have not committed their life to Jesus Christ yet. The survey was solely provided to Christian student ministry leaders, and hence these students may be participating in some activities conducted by the Christian ministry.

In order to understand if gender has any relation to technology-related issues, the participants were asked to identify their gender. The following chart shows the participant's gender numbers.

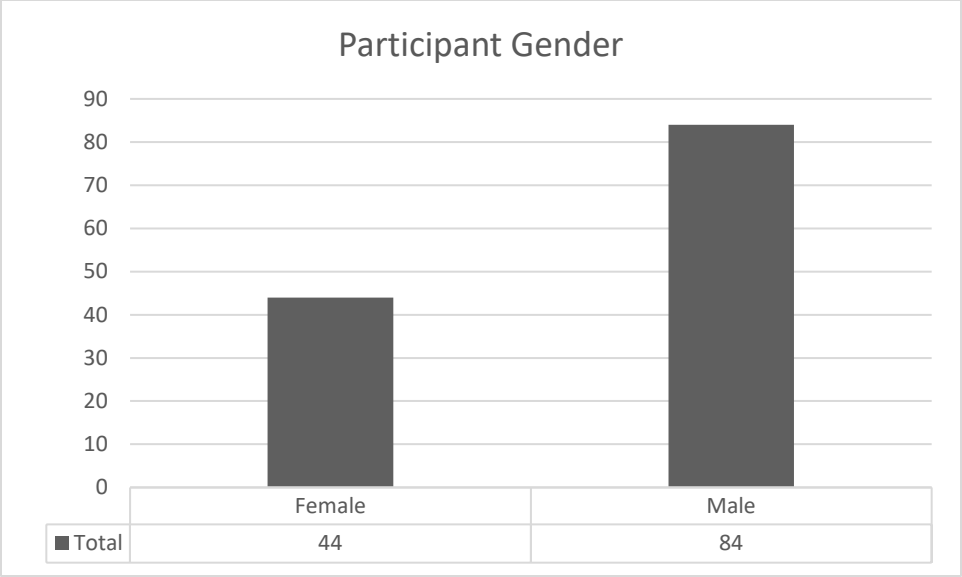

Figure 4: Survey Participants Gender.

There were eighty-four males and forty-four females who took the survey. The participants of different gender were well distributed among different countries. Hence, there was no need to analyze data from each country based on the response to the gender question.

The survey was targeted to be completed by students within the age group of 18-34 years. The participants were asked to identify their age group.

The following chart shows the age group to which each participant belonged.

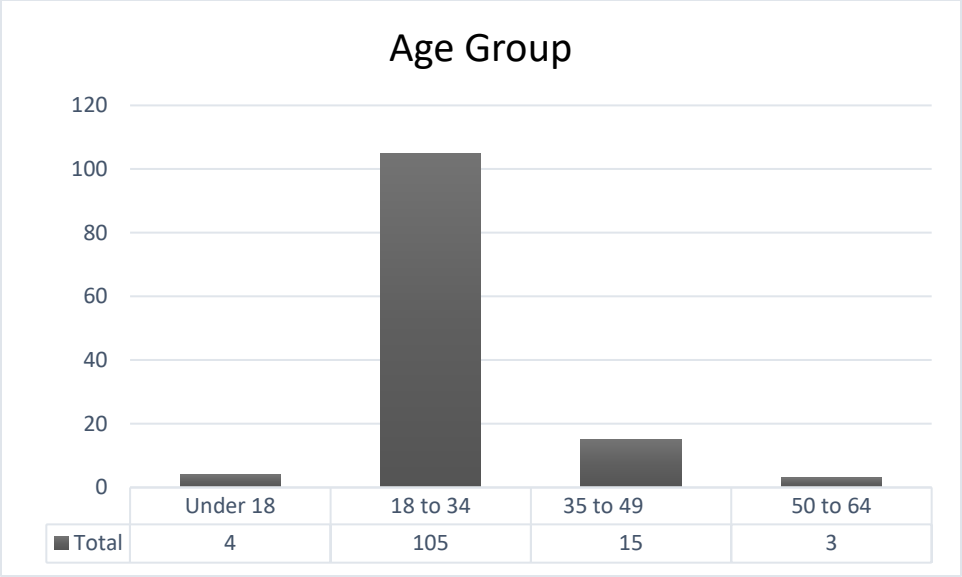

Figure 5: Survey Participants Age Group.

One hundred and five participants were in the age group of 18 to 34 years, and fifteen were in the age group of 35-49 years, three were in the age group of 50 to 64 years, and four were under 18 years. There were no participants above the age of sixty-four. The researcher was targeting around one hundred survey participants, and this target was achieved. The survey results reflect the views of Christian students in different countries as initially intended.

Survey Question Responses

After the demographic questions, the next fourteen questions focused on understanding the participant's views about various topics related to this project.

The first question was about the time spent on phones or devices connected to the internet every day. This question was essential to understand the trend among the participants when it comes to using internet-connected devices as the internet has become affordable in most places, and the use of phones has gone up drastically in the recent

years. According to Asad Butt, average smartphone users used their phones for more than 4 hours a day in 2019.[97] The survey results confirmed the trend among participants.

The following chart shows the average time spent on the phone and internet-connected devices every day.

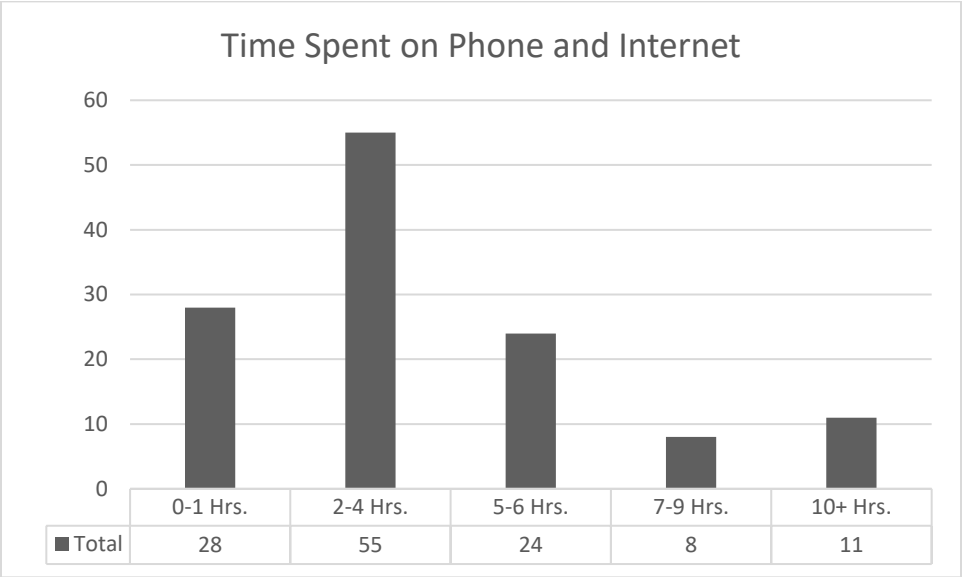

Figure 6: Time Spent on Phone and Internet.

In the options presented to the respondents, there was one issue that the researcher observed when compiling the data after the survey was concluded. There was a lack of consistency between the options 2-4 and 7-9 hours. They are artificially higher by fifty percent than other options. Fifty-five responded that they spend between two to four hours on devices connected to the internet every day. There were twenty-eight who responded that they spend less than one hour. The majority of participants who responded in this category were from Myanmar, which is reflective of the general availability of the

[97] Asad Butt, "101 Vital Mobile Statistics You Need to Know In 2020," *Quoracreative*, December 22, 2019, accessed January 02, 2020, htittps://quoracreative.com/article/mobile-marketing-statistics.

internet in that country. There were twenty-four who responded that they spend between five to six hours daily, while eight participants said they spend between seven to nine hours. There were eleven who responded that they spend more than ten hours every day. Six out of eleven participants were from the USA. It shows that the usage of the internet was generally high among survey participants. The question was very explicitly about time spent on these devices, and hence it is clear that participants were not thinking about devices just being connected to the internet.

The subsequent questions were about technology addiction and if the participant felt that they were addicted. This question was added to see if people had a realization regarding their addiction or if they were just ignorant. The following chart shows the responses from participants.

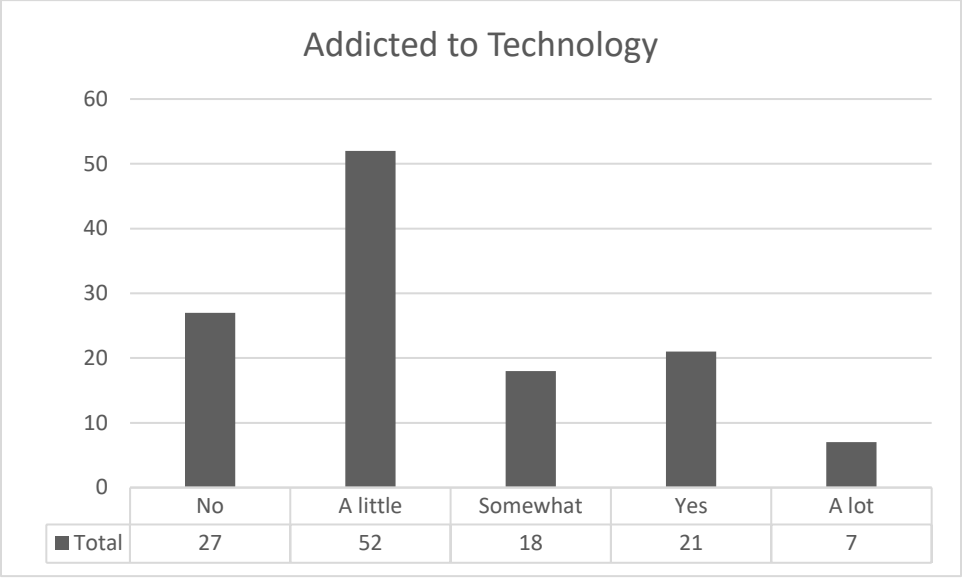

Figure 7: Participant's technology addiction.

Fifty-two said that they were a little addicted while eighteen responded as being somewhat addicted. A total of ninety-eight participants admitted to being addicted, and

only twenty-seven said they were not addicted to technology. It shows that people realize that the overuse of technology is making them feel addicted. The researcher was a little surprised by this admission by respondents since it is not common for people to admit that they are addicted to something. Generally, people tend to justify their addictive behaviors.

The next few questions were intended to understand the level of dependency on technology by the respondents. They were asked how they would feel if their phone was taken away for one month. The following chart shows the responses.

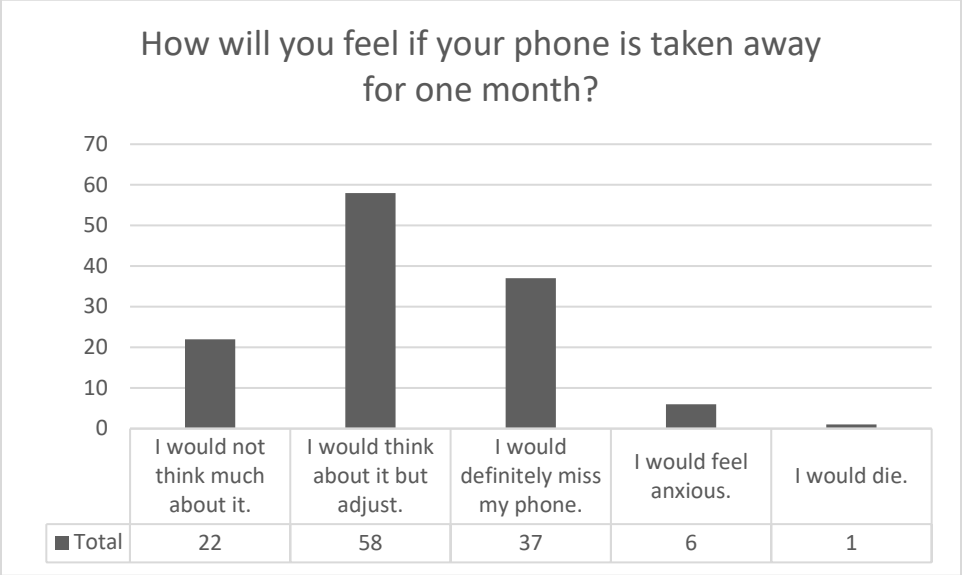

Figure 8: Without a phone for one month

Only one person responded that they would die without a phone for one month. The response to this question was a little surprise when compared to the responses to previous questions about technology addiction. Six respondents admitted that they would feel anxious if the phone was taken away.

The next question was about the participant's familiarity with artificial intelligence. The following chart shows the responses.

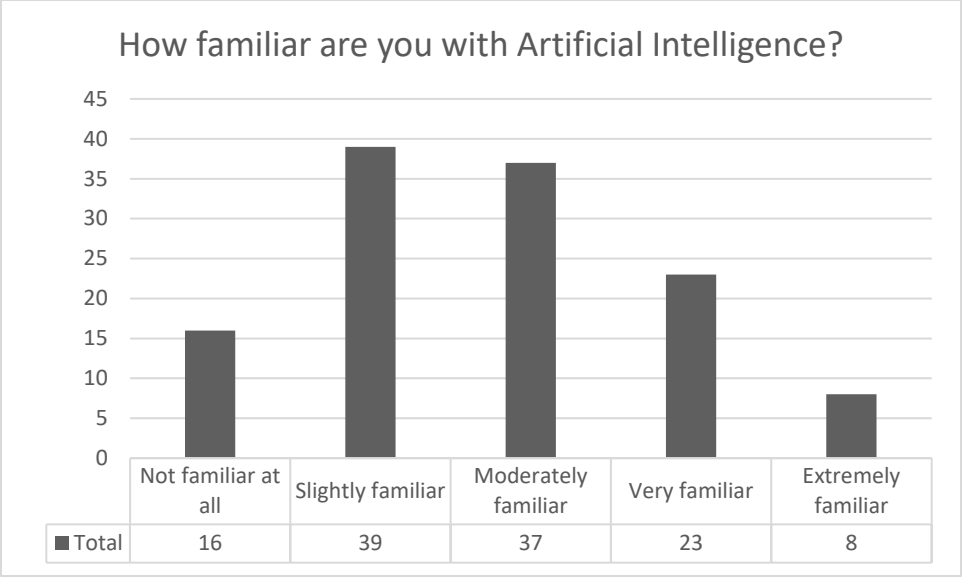

Figure 9: Familiarity with AI.

Only sixteen responded that they were not familiar at all. The rest of the participants were familiar with various degrees. This response was a surprise to the researcher, as this shows that more people are aware of AI. The response shows that people are using or they are hearing about AI, which confirms that this technology is impacting more people daily. The researcher was not expecting many people to admit that they know AI since an average person who uses AI-powered applications usually is not aware of the technology used behind it.

If the above question did not receive a high number of people confirming that they are aware of AI, some of the following questions would not have made sense. Since one hundred and seven responded that they are familiar with AI to some degree, the researcher thinks that the answer to the next few questions is critical. It may help to understand how people are thinking about their faith when they see all the technological advancements happening around them. The next question was if the participant thought

that in future robots with AI will replace humans. The following chart shows the responses to this question.

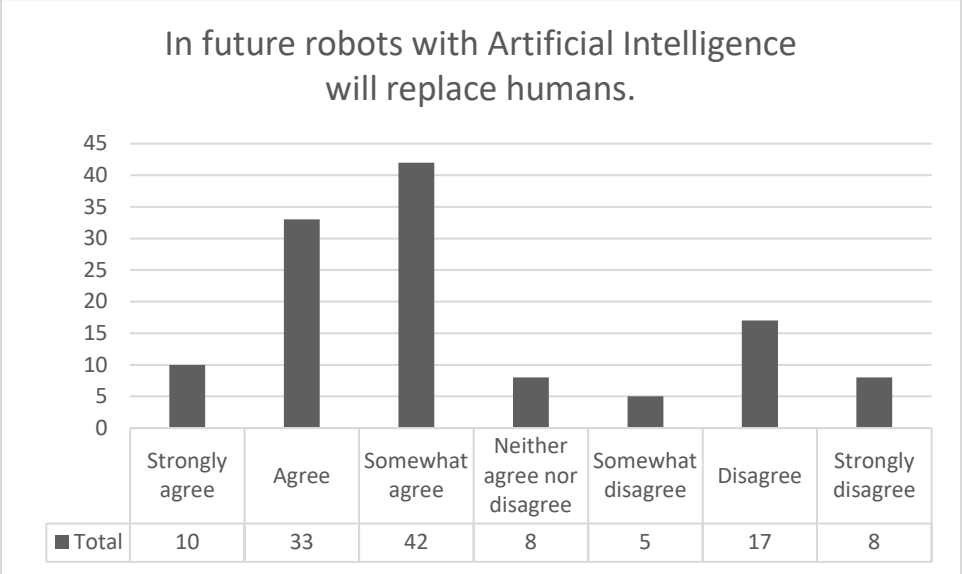

Figure 10: Response to the question if in future robots will replace humans.

This question can be interpreted in different ways, and the responses may have been influenced by how the participant interpreted it. Someone can think about robots replacing humans at factories and workplaces. Others could have thought that it may be referring to AI-powered robots eliminating humans, as seen in science fiction movies and as warned by some people. Thirty-three people agreed, forty-two somewhat agreed, and ten strongly agreed. The number of people who agreed to various degrees was way more than those who disagreed with it. Irrespective of the perspective in which this question was answered, this shows that the younger generation is taking AI seriously and not underestimating the fact that it can replace humans in different ways. More people think that AI will impact humans.

The next question was if the participant was willing to consider a robot as their close friend in the future. The following chart shows the responses.

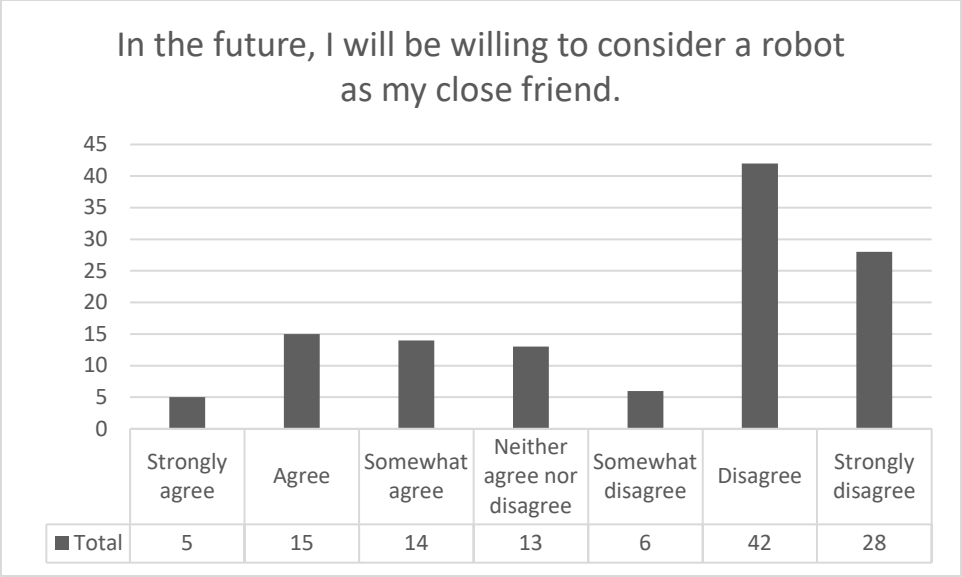

Figure 11: Willingness to consider a robot as a close friend.

Fifteen people agreed, while five said they strongly agree. Fourteen responded that they somewhat agree. A total of thirty-four agreed to somewhat degree, while thirteen responses were neutral. An overwhelming majority of participants, seventy-six, disagreed to some extent. Considering that this response is coming from Christians, and many people responded positively to this question should raise some concerns among church leaders. The question was about considering robots as a close friend, and if many think it is not a problem, then focus needs to be there to address the relational aspects of humans and how humans who were created in the image of God should view machines made by humans. If this trend grows, it could impact the church at large from the aspect of the fellowship of believers.

The response to the next question is critical within the context of this project. The question was what participants thought about people marrying robots to meet their emotional and physical needs in the future. The following chart shows the responses.

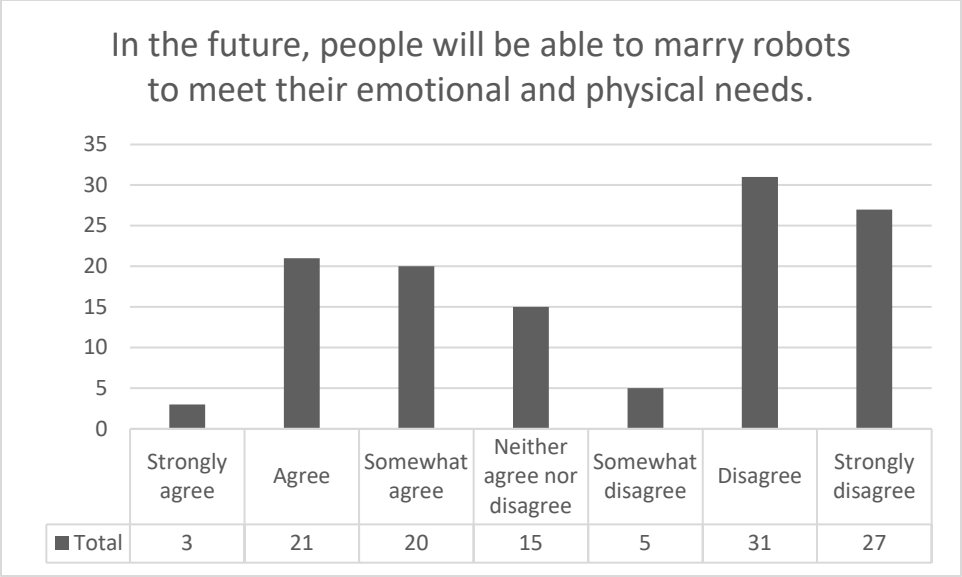

Figure 12: Response to marrying robots.

Twenty-one agreed that people would be able to marry robots in the future while twenty somewhat agreed, and three strongly agreed. More people disagreed, but the number of people who agreed is not less. Forty people responded that they agree to some extent. The response should be a concern for Christian leaders, and there must be steps taken to address this issue. This response shows acceptance of the fact that in the future, there can be emotional and physical relationships between humans and robots.

The next question was about the participant's comfort level with riding on a self-driving car with no driver sitting in the driver seat. This question intended to see how confident people were about the reliability of technology related to AI. The self-driving car was used in this question as it is an already implemented application of AI in some countries, and there is much interest in this area. The following chart shows the responses.

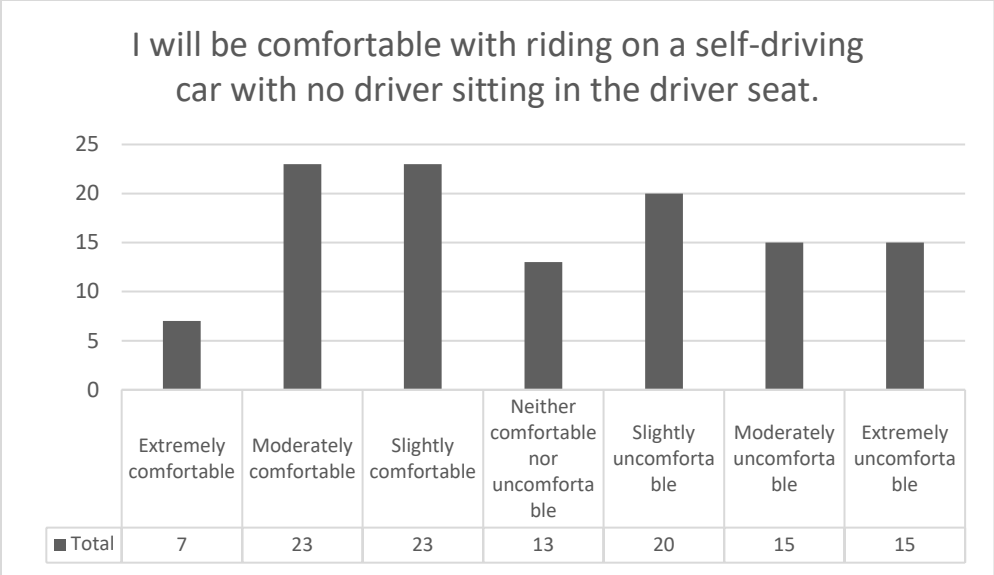

Figure 13: Response to riding on a self-driven car.

The responses were very spread out, which shows that when it comes to things that involve dangers to their own life, people are still not ready to accept it. Forty-three responded with some degree of comfort to riding in a self-driving car. Thirteen were neither comfortable nor uncomfortable. Fifty people responded that they would have some level of discomfort.

There are already instances of religious service being conducted by robots, which have been addressed in Chapter three. The next question was if the participants were willing to attend a religious service where robots would perform rituals like prayers, preaching, and teaching. The following chart shows the responses.

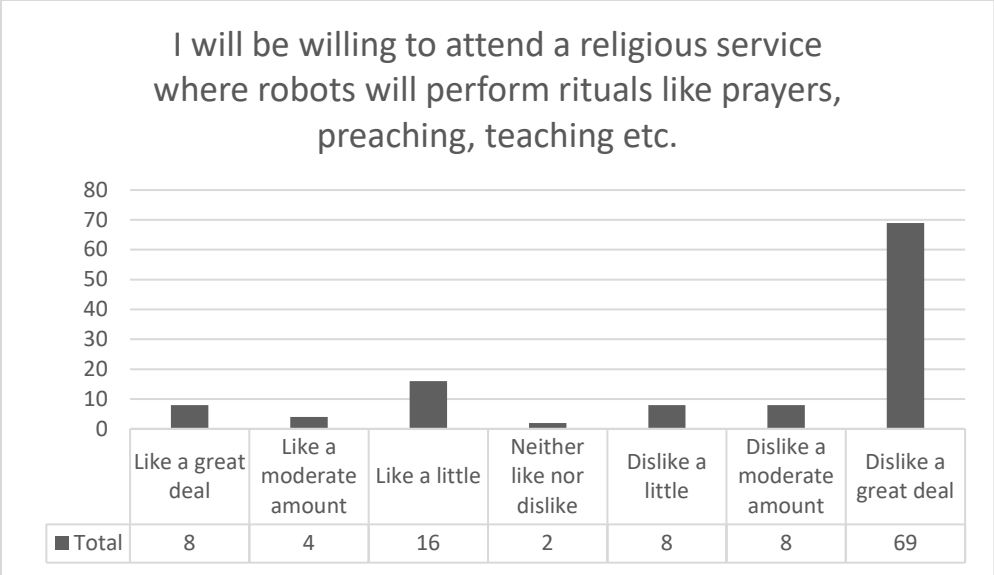

Figure 14: Response to robots performing religious rituals.

Sixty-nine responded that they would dislike a great deal if robots performed religious rituals. Sixteen responded that they would dislike it to some level. Eight responded that they would like a great deal, and another twenty responded that they would like it to some level. Considering that Christians provided this response, it is alarming that twenty-eight responded that they would like to some level that they are willing to attend religious services where robots will perform rituals like prayer, preaching, and teaching.

The next question was to evaluate if participants believed and think that there is a God who created everything, and humans are not on the earth by accident. The following chart shows the responses of participants.

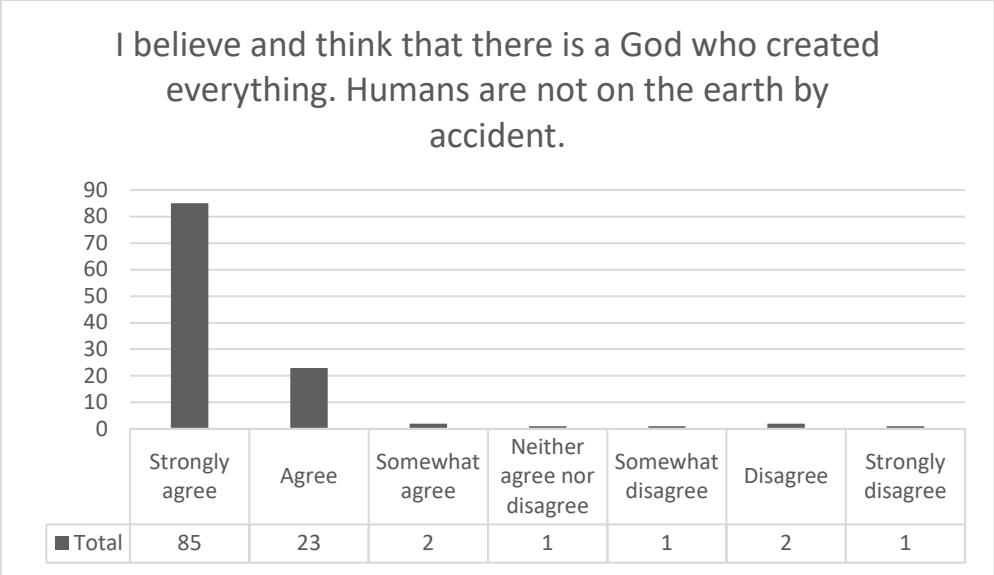

Figure 15: Belief in God.

The majority of people responded that they agreed, while four disagreed to some degree. Considering that this was a survey conducted among Christians, the researcher was expecting this response. There was no surprise in this response except that some people disagreed that there is a God who created everything.

The next question was about what people thought of humans creating robots that are robust, almost human-like. Will it will be appropriate to call humans as “god” to be worshiped by machines? The following chart shows the response of the respondents.

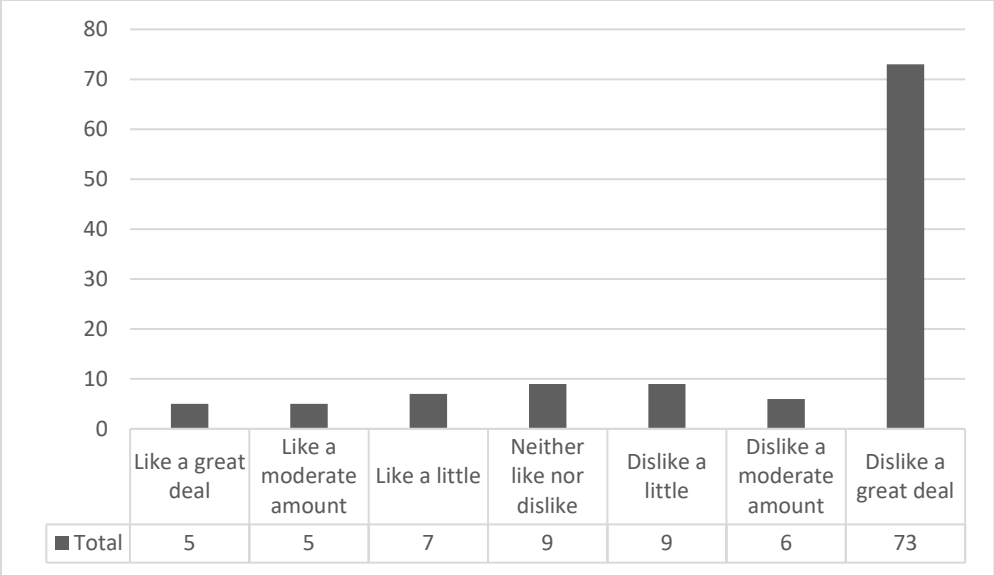

Figure 16: Calling humans as God question response.

Seventy-three did not like it, and only seventeen people responded with some level of liking to address humans as God. Considering that the respondents were Christians, this should be a concern for Christian leaders.

The next question was about if they worry that when machines start making their own decisions, will it put humans in a dangerous situation with the possibility of large-scale harm. The following chart shows the responses.

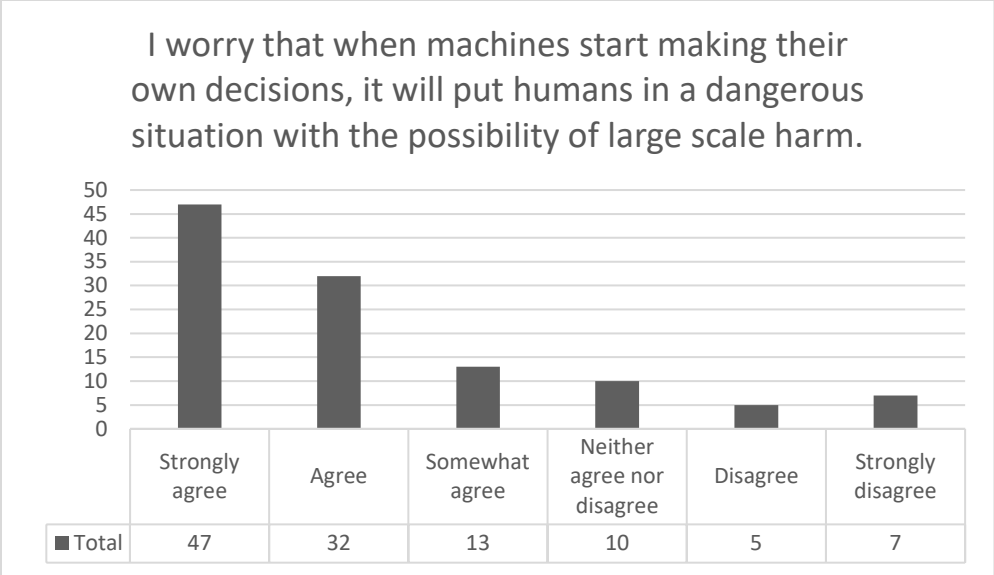

Figure 17: Response to AI machines making decisions.

Forty-seven people strongly agreed, and thirty-two agreed that when machines start making decisions, it will put humans in a dangerous situation. Twelve people responded that they disagree to some level. The responses show that, in general, people are aware of some dangers associated with AI.

The next question asked was to evaluate what respondents thought about their faith when they see scientific developments. The questions were intended to understand if they believed in science more than their faith. The following chart shows the response.

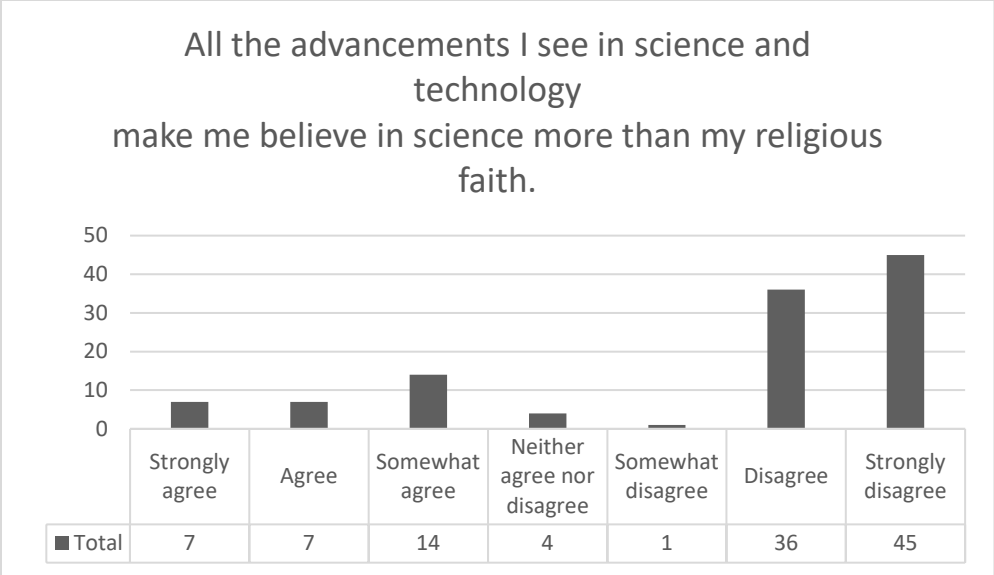

Figure 18: Belief in science or God.

Forty-five responded that they strongly disagreed, and thirty-six disagreed that they believe in science more than their religious faith. Seven people strongly agreed and another seven who agreed that it is affecting their faith. The response should be seen as a matter for concern as there are young Christians who believe in science more than God due to advancements they see in science and technology.

The final question in the survey was if those who believe in God or religion are ignorant and are blind to the realities of science. The following chart shows the response.

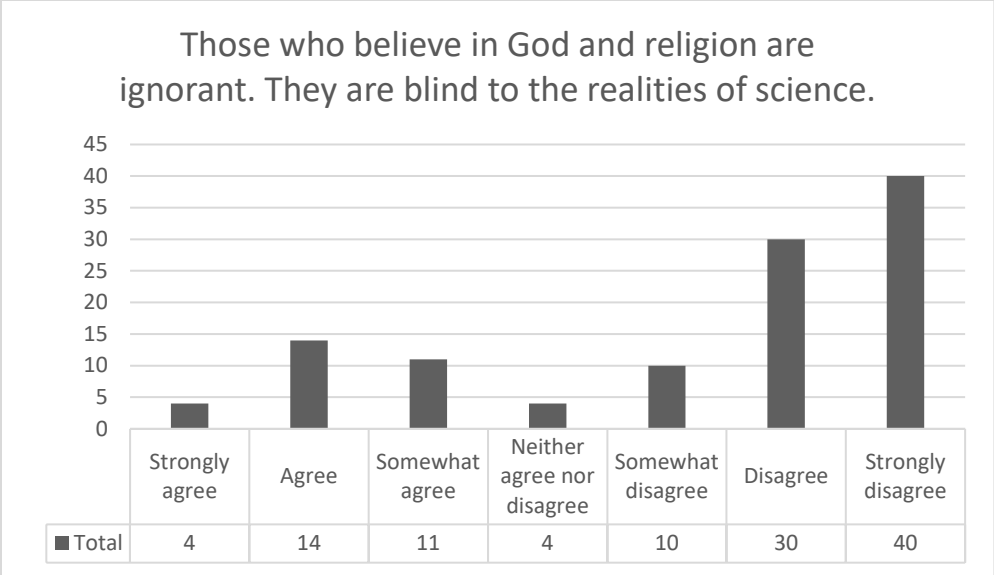

Figure 19: Religion vs. realities of science.

Twenty-nine agreed to some level that those who believe in God and religion are ignorant and are blind to the realities of science. Eighty disagreed to some degree. The response was a bit surprising to the researcher when compared with previous responses to questions. The response shows that science and technology advancements are influencing some Christians to think that those who follow God are blind, and they do not understand the realities of science. There can be different reasons for this response. Some people think belief in God is incompatible with science. Some people believe in God and do not understand science and hence may not be aware of the fact that belief in God is compatible with science.

The survey concluded with two optional questions to provide names and email to receive the summary of the report. Seventy-three respondents provided their names, and sixty-three provided their email address. The researcher will provide them a link to this report once it is published.

Interview Question Responses

All twenty-one interview participants were asked a set of open-ended questions. Each response was recorded, coded, and counted to create data points.

Pastors and Ministry Leaders Responses

Ten ministry leaders and pastors were interviewed to understand their views on AI and whether they consider it as an issue. Sixteen questions were prepared, which was shared with the interview candidates beforehand if requested. The interview was set up for forty-five minutes to one hour. In a few instances, the interviewee was able to give only thirty minutes. The researcher skipped a few questions in some interviews, and they are evident in the responses to the questions and data points.

Question 1: Familiarity with AI

Participants were asked about their familiarity with AI as some level of knowledge was required to respond to many interview questions. All the participants were selected after confirming that they are well-versed with challenges related to technology and have at least heard about AI. This question helped to understand the level of knowledge about AI of the interviewee. Table 2 has the responses listed along with frequency.

Table 2: Responses to Question on Familiarity with AI

Response	*Number of Occurrences*
Very Knowledgeable	1
Somewhat Familiar	4
Relatively Familiar	4
Familiar but not sure about technical details	1

Four people confirmed that they were somewhat familiar, and four confirmed that they were relatively familiar with AI. One interviewee was very knowledgeable, was

responsible for drafting an official statement on AI for a religious organization. At the time of the interview, he was getting ready to get his book on AI published. One interviewee responded that he is familiar with AI but not sure about the technical details and how it works.

One responded that he thought he had seen AI in Siri and Google Home. Another responded that he did some study six years ago after talking to a woman at a meeting. He mentioned hearing about implanting a chip to the brain of a human being and shared some thoughts about an idol speaking, as seen in Revelation chapter thirteen. Another responded that he has seen how AI is used at his workplace. AI is used for performing medical procedures with accuracy. All the interviewees had at least a basic level of understanding of AI.

Question 2: Time spent on phone or devices connected to the internet every day

The next question was about the amount of time spent on the phone or devices connected to the internet every day. This question was not asked to one of the interviewees since the response provided for the first question was long, and it was evident that this person spends significant time on the Internet. Table 3 has the responses listed along with frequency.

Table 3: Responses to Question about Time Spend on Internet

Response	*Number of Occurrences*
1-2 Hours	2
2-4 Hours	2
5-6 Hours	2
7-12 Hours	2
12+ Hours	1

The internet usage varied among participants, and two responded that they only use one to two hours daily. There were four who said they use between two to six hours.

Two people said they use more than seven hours, and they included the time they work during the day. There was one person who said the usage is more than twelve hours as he is connected and always responding to notifications that appear on the phone. During the interview, he gave an example of how he quickly looked at a message which came on the phone and how he responded while talking to the researcher and thought that the time people are using the internet is more than they realize.

The responses show that different people have different ways to look at the usage of technology. As phone companies are working on digital well-being by bringing on applications that monitor and report on actual usage time of different applications and screen time, it is beneficial for everyone to use such features.

Question 3: Has anyone approached you for help with technology addictions? Main challenges with technology, which negatively impacts spiritual life.

The participants were asked if anyone from their congregation or ministry context approached them to get help with technology addiction. They were asked about the main challenges with technology, which they think will negatively impact a person's spiritual life. Table 4 has the responses to question about anyone approaching the participants for help with technology addictions.

Table 4:Response to if anyone has approached for help.

Has anyone approached for help?	*Number of Occurrences*
Yes	6
No	4

Six participants responded that someone had approached them for help with technology addiction. One shared about helping someone with porn addiction. Four thought they could not recollect any specific incident of anyone approaching them personally but confirmed that they are aware of issues. They have discussed issues with

other pastors. One interviewee is currently working with people dealing with technology-related addictions. One participant also shared parents approaching for help with children's overuse of the computer.

Many participants spoke at length about the challenges with technology that they thought negatively impacts spiritual life. More than one participant stressed that they think technology is a blessing and gift from God. God has given humans creative abilities. Any technology initiatives Christians pursue should be for the glory of God. Table 5 has responses to the question.

Table 5:Response to Question on Technology Challenges that Impact Spiritual Life.

Response Main Themes	*Number of Occurrences*
AI used in a way which violates the command to love each another	1
Dehumanize neighbors with the use of technology	1
Addicted to fame and fortune.	1
People are trying to add and do more than what God intended.	1
Social media	1
The natural condition of the heart is magnified by technology	1
Knowing God requires attention and space, people are distracted	2
They replaced the Holy Spirit with holy google. People are not asking God or developing spiritual ears.	1
Reduces time for prayer, Bible reading, communication, and relationship.	3
A lot of focus on negative things	1
People are not doing an in-depth Bible study. It is like a driver who is using GPS but has no idea about direction.	5
Less connection with other people	1
Pornography	1
Promiscuity is increasing due to more privacy	1
Keep up with new technology	1
More time spent on the phone and no desire to have face to face conversations.	1
Limit the use of technology for kids without taking it away	1
There are no boundaries	1
Family time and friendship is impacted	2
People do not listen to local pastor messages due to the availability of messages online, which reduces relationships with the shepherd.	1

Children are mostly on computer and do not play outside	1
People are distracted during church service as they look at devices.	3
So much content available and not able to distinguish between fake and accurate information	2
People are exposing more information than they realize	2
Young people are on the phone most of the time	1

Many participants shared many examples during the interview about the challenges they thought is impacting the spiritual life of Christians. Humans have developed a desire to upgrade themselves like they want the latest gadgets. Fewer people are content with life, and it has resulted in increased stress. Family relationships are impacted, and virtual conversations have overtaken real conversations. More conversations are short and to the point.

People are not reading and understanding the Bible as needed and are relying on online resources more. There are many positives, but some doubted that real spiritual growth and spiritual formation could take place in such scenarios. Some respondents emphasized the need for personal meditation of the Bible and prayer time without distraction. Distraction was shared by many as a significant concern. One responder stated that “people are more engaged with Facebook or other social media rather than being present in a conversation.”

Phones are useful for communication, but they are consuming much time. People are in a hurry. Most technology is designed to make things more efficient and help with different aspects of life. One respondent spoke at length about the challenges they are facing with their children. Trying to limit technology is resulting in emotional issues with kids and family. One respondent shared the frustration of not being able to keep up with

emojis and not being able to understand their meaning when children send messages with them.

Privacy concerns were also raised as many people have no idea how to set boundaries on their online activities. People are exposed to way more information than needed, and it could cause harm in the future. The fact that some people felt free when they took a break from all use of technology is proof that unknowingly many are addicted and cannot stay offline for long.

Another area of concern raised mostly by pastors was the issue of the use of mobile devices during church services, which is a cause of distraction. There are people in the congregation who are more interested in hearing their favorite preachers online and are less focused on the messages that were given by the local church pastor. The concern is that people may not be taught sound doctrine, and there is no way to be balanced in the study. There is a lack of accountability, and the relationship with shepherds are reducing.

Even though this question focused on negative aspects, few participants emphasized that technology can be used to reach people. People can find information easily by searching.

Question 4: Robots with AI and their impact on humans.

The interviewees were asked about their view on robots with AI, and how they think it will impact humans. Table 6 has the responses listed.

Table 6:Response to Robots with AI

Responses	*Number of Occurrences*
By large, it will be good for humans.	1
It may help, but the issue is with dehumanization	4
Not to be fearful	1
It will impact humans inevitably	1
Robots having the same interaction as humans may be possible	1

It should be beneficial where humans are not suitable	2
Beneficial as surgeries are now performed using AI	1
It will minimize human errors	1
The need for the human workforce will reduce and will affect the financial well-being of families.	3
You are crossing the line by placing the human values into a machine.	1
Increase productivity	1
Good with repetitive jobs.	1

All the respondents thought that robots with AI would impact humans. Some were not sure how much technology will evolve to be impacting humans in a significant way. Some thought it would be good for humanity, and people should not be fearful and should embrace it. One respondent gave a specific example of how a recent surgery he had was done with the help of robots with AI. He thought traditional doctors could become better doctors by becoming adaptable, and by embracing AI. AI will make it easy to complete many tasks.

One respondent shared that he thinks that God expects people to work, and robots should not be used everywhere, leaving humans with not much work to be done. After the researcher gave specific examples of robots replacing human workers, some expressed concerns about how the economy will work if there are more automation and robots. They felt less educated people would find it challenging to find jobs. There were also concerns raised around trying to see robots like humans and dehumanizing people.

Question 5: Thoughts about marrying robots and having a friendship with AI-powered robots and fulfilling emotional and physical needs. How will it impact Christians in the coming years?

The next questions were around people marrying robots and having a relationship. This topic has been discussed in chapter three of this report. The researcher wanted to see

how ministry leaders will respond to this, and if they thought the church would have to deal with this issue. The main themes from the responses are listed in Table 7.

Table 7: Response to Humans Marrying Robots

Responses	*Number of Occurrences*
It will be a form of advanced pornography	1
It is hype.	1
It will start happening more	1
It cannot be considered as real marriage or acceptable by the church	1
The person who marries a robot is someone enslaved by technology	1
The primary need of humans is not sex. God ordained it.	1
People should not be marrying robots	2
It is an abomination. Marriage should be between a man and a woman.	2
Sex with robots can also be considered as adultery	1
Impact on Christians will be minimal	1
It is not what God intended for humans.	2
Lonely people may use it	1
The impact is not felt currently in church, but in the future, it will happen.	1
Not sure how it will work. Robots will be like a pet. Real like complexities are way more than a robot.	1
Some churches may be okay with it in the future as it has happened with other things. We can expect some churches to follow the world	2
If churches do not take a stand and understand the dangers which lie ahead, it can be a big issue.	1

Many respondents expressed their shock to know that such things are happening. Some thought people marrying robots will happen, but it will not be a common thing in society. Some thought it is another form of pornography or should be seen as a sex toy and nothing more than that.

One respondent spoke at length about how this would impact about how humans viewed themselves. He was worried that things like this would reduce the value of humans in their own eyes. Some respondents could not comprehend how a robot can meet the emotional needs of a human being. Some thought it was going to be fake and

not real. A comment was made about how humans have souls, and machines cannot have a soul.

Someone thought this is a sign of the end times. Pastors should be teaching the congregation about the value of humans in the sight of God. One respondent thought it would not impact real Christians while more thought it would impact Christians. One respondent thought that it would impact the church in the next twenty to twenty-five years. Many think that if something is not hurting other humans, it is okay. He stated that sin is not only against other people but against God.

Question 6: Robots performing religious ceremonies and the use of AI for preparing sermons.

The next question asked was about using robots performing religious ceremonies. Many preachers use online help to prepare sermons. The respondents were asked about their view of using AI to generate relevant sermons and preach based on what was generated by a tool. The respondents were also asked about their thoughts on divine inspiration and the possibility of computer algorithms being inspired. The main themes from the responses are listed in Table 8.

Table 8: Response to Robots performing religious ceremonies

Responses	*Number of Occurrences*
Humans are not divinely inspired as they are not perfect	1
Algorithms cannot be inspired	6
Machines do not think. AI is a mathematical computation	1
It may be helpful in the teaching ministry	1
Robot preachers are not going to work. Cannot accept it	2
No firm opinion on this matter	1
Use of AI will limit God's creativity	1
AI should only be used for a specific purpose	4
A preacher must receive from God and speak	4
It could come to church in the future	1

There was a time when preachers did not do much sermon preparation. Now people use commentaries and other materials. The use of AI as a tool should be acceptable.	1
Preachers must be careful to draw a line, and God-given boundaries must be applied	4
Doubt that robot can feel the heart and soul of people	3
It could be related to what is seen in Revelation chapter thirteen	1
Robots do not have a connection with the Holy Spirit	3
It is good to use sermon preparation tools	3

Many respondents did not like the idea of robots performing religious ceremonies and did not think to have robots to preach was a good idea. Most were comfortable with the use of sermon preparation tools but insisted that preacher should be hearing from God and should depend on the working of the Holy Spirit. One interviewee did not think that humans are inspired as they are not perfect. Many agreed that there could be opportunities for the use of AI in ministry, but boundaries have to be defined, and preachers and churches should be clear about not crossing them. One was very concerned if this will lead to some form of idolatry. The preacher is not just speaking but also feeling the emotions and seeing the reactions of people. Preaching ministry should be seen at that level and should not be handed over to AI-based robots. Robots performing religious ceremonies may be acceptable in other religions based on their philosophy. Christianity is a relation-based experience with God and humans. Robots and AI should not be used where it could affect the relationship between God and humans.

Question 7: Can humans be worshipped by AI machines they created?

The next question was whether humans create robots that are robust, almost human-like, would it be appropriate to call humans a ‘God’ who could or should be worshiped by machines. The main themes from the responses are listed in Table 9.

Table 9: Humans worshipped by AI machines.

Responses	*Number of Occurrences*
No	10
Humans create but not like God	1
It is contrary to what God commanded	5
Machines are servants of humans	1
This thought reflects the human moral condition	1
Humans can never become God	4
What humans create cannot have the spirit	1
God is the only creator. Humans are just inventing	1
Humans get respect and admiration but should be desire worship	2
Humans cannot take the place of God	2

All the respondents objected to the idea of humans being worshipped by machines. Some thought it could happen in some ways, and someone may create machines and program them to worship humans. Machines worshipping humans will be a reflection of a fallen moral condition of humanity. Humans are not co-creators with God and do not create like God. Humans are just inventing or finding out things that are already made available by God. There are many instances of humans worshiping other humans. Acts chapter fourteen records that people worshiped Paul and Barnabas. When a person or a thing is found to be doing something unusual, there will be people who will be willing to adore them. One respondent raised concerns about people worshipping AI.

Question 8: Level of concern with AI

The next question was about the level of concern around AI based on what participants knew, and if they worried about all types of AI, or it was just around moral and ethical issues. Responding to this question was a little challenging for some participants who did not have much exposure to AI. The main themes from the responses are listed in Table 10.

Table 10: Level of concern with AI.

Responses	*Number of Occurrences*
Concerned with how it is used	1
No worries as the Bible tell how it will all end	2
Worry is around moral and ethical issues	2
There are good things with AI, and that should not be ignored	4
No concerns until this interview	1
It will impact as far as it is allowed	1
Worried about data and privacy	2
Security threat	2

In general, the respondents were concerned, but many were not sure about the level to which AI is currently used and will be used in the future. Christians should not worry as God is in control was the response received from some people. Christians should continue to advocate for love. Few respondents thought there would be good and bad with AI, and it is up to individuals to choose the good and reject the bad.

Some raised concerns about how China is using AI for surveillance and had concerns that such things will increase and could help governments to track down missionaries. Only a few respondents were clear about ethical and moral issues related to AI and were concerned.

Question 9: Conscious robots and humans created in the image of God.

The interviewees were asked about their thoughts around the possibility of AI robots with consciousness. They were asked about how they viewed robotic consciousness when compared to the consciousness of humans created in the image of God. The main themes from the responses are listed in Table 11.

Table 11: Consciousness in Robots and Humans

Responses	*Number of Occurrences*
It is hard to define consciousness	5
Machines can imitate humans, but it is different	2
Robots can be developed with a state of awareness	2
Robots having a soul is difficult	4

God gave humans the abilities	2
Artificial consciousness is not possible. The spirit of God is needed for that	7
God put real consciousness in man, and it cannot be added to machines by humans	2

Many respondents struggled to define consciousness and thought that for robots, it should be considered as awareness at a superficial level when compared to humans. A robot with a camera can capture video and process it and take action. It is hard to draw a line with this question. Humans are aware of their existence, and it is very complicated. AI robots can imitate humans, but it will never be like human consciousness. Some respondents empathized that humans have a spiritual dimension, and it should also be considered.

One respondent thought that from God's point of view, the perfect creation is humanity. Humans were created in God's image. Humans can create a piece of metal with emotions and mental capacity. That is not going to get close to what God created. God put real consciousness in humans, and machines can never be made the same. Robots with AI may get better at reading human emotions, but it cannot be seen or compared with humans.

Question 10: View on Artificial emotional intelligence and comparison with human emotional intelligence.

The interviewees were asked about their views about Artificial emotional intelligence. They were asked if it can be equated with human emotional intelligence. The main themes from the responses are listed in Table 12.

Table 12: View on Artificial Emotional Intelligence

Responses	*Number of Occurrences*
It may be possible to create something with some emotions. Not full range	4
It may be a reflection of human emotions	1

We cannot compare it with God created	1
No. It is not possible to create	4
The machine will be a machine. It can be smarter in some ways. However, artificial emotions are not possible.	2
No knowledge about this topic	5

Many respondents admitted that they have no idea or did not give much thought to this topic previously. Few thought it might be possible to create something that may experience emotions, but it may be a reflection of human emotions. They doubt anything like human emotions can be made with AI.

Artificial emotions cannot be compared to emotions found in humans. Man can be soulish, and the spirit has an impact on the soulish behavior. Only one respondent thought it is possible to invent artificial emotional intelligence with self-awareness. Human emotions are very enhanced compared to what could be created by humans. The spirit of God governs humans, and anything created without the Spirit of God cannot be the same.

Question 11: Robots as a friend or married partners

The next question asked to the interviewees was about humans having robots as a friend or married partners. Will it become a regular thing in society in the future? Do these things trouble them as a Christian leader? The main themes from the responses given are listed in Table 13.

Table 13:Response to Question on Robots as a Friend or Married Partners.

Responses	*Number of Occurrences*
People marrying robots may increase since we do not live in a Christian world.	1
People may treat robots as they treat dogs	1
It will not become normal. It will happen but will not be a significant number.	4
It may become used a lot but will not become normal.	2
Yes, it troubles as a Christian leader.	5

The majority of respondents stated that people marrying robots troubles them. Many stressed that those who marry robots would not be a majority. A small portion of the population who will go after these things, but it has the potential to impact Christians who are not rooted in the Bible. Some thought people might treat robots as they treat pets. One responded that it would be like misusing the technology.

One respondent gave the analogy that alcohol was prohibited earlier, but the usage has become routine now. It does not mean that everyone is drinking alcohol. Some people drink alcohol, but more people do not drink. There will be people who will use robots for the wrong purpose. It will be a minimal number of people who will marry robots.

Question 12: Views on Technological singularity

"Technological Singularity" is the idea that AI will surpass humans in every intellectual and creative dimension, leading to incredible advances. The respondents were asked if they thought technological singularity is possible based on the advancements they see currently. The main themes from the responses are listed in Table 14.

Table 14: Response to views on Technological singularity

Responses	*Number of Occurrences*
Humans are creating AI. So it is not possible.	4
Yes, it is possible.	2
There will be tremendous growth in technology, but it will not get better than humans in all aspects.	3
It may take market share, and people will lose jobs.	2
God has given humans creativity. So it may be possible.	1

The respondents were divided on this question. Few admitted they are not sure what will happen due to a lack of awareness about everything happening with AI. These are created due to the creative ability given by God, and hence it could become better, but

there was doubt expressed by many that AI will become better than humans in all aspects. God created humans in his image, and it is doubtful that humans will create anything better.

Question 13: Views on Solitariness and its effects

Solitariness is the state of a person who lives alone or in solitude or avoids the society of others. The interviewees were asked if it will increase as more advancements are made in robotics and AI. They were also asked about their views on how it will work based on how God has created humans. The main themes from the responses provided are listed in Table 15.

Table 15: Responses to the Question on Solitariness.

Responses	*Number of Occurrences*
Solitariness is an epidemic today	2
Loneliness is not good for humans	4
One of the major issues with technology is an emotional disconnect	2
It will increase of AI	5
I am concerned about this	9
God created humans to be in social situations	4
Loneliness among Christians will grow as people chose to stay home and attend services	6
People are already disconnected	6
Society moved from human communications to technological communication	5
Kids are not developing social relationships	2

Almost every interviewee admitted that loneliness is an issue in society. Many people are longing for someone to talk. It is an epidemic, and it is not going to help humanity. God created man as relational, and it is not changing, and hence with AI, the emotional disconnect is going to increase. Many expressed that they are concerned with this issue as it has already impacted society. One participant works as a Clinical supervisor and deals with patients suffering from loneliness. He shared in detail the

challenges and the pain observed in real-life situations. Humans staying away from social interactions and meaningful relationships and replacing it with technology is not healthy for them.

The industrial revolution provided many benefits, but it also changed society. Humans have to deal with unintended consequences if they are not careful with things they embrace and adapt. The trend will increase as humans look for more freedom and independence and do not want to rely on other humans for anything. There were also concerns around kids spending more time online and not developing social relationships.

Another concern raised by some participants who are pastors had to do with the trend among church members to skip church services and fellowship. As technology enables people to attend services from the comfort of their homes, the fellowship of believers is becoming virtual. God designed humans to be relational, and a church cannot function if members do not grow in fellowship and a healthy relationship with both God and other humans.

Question 14: Views on Techno Sapiens.

"Techno Sapiens" is a new intelligent species resulting from Homo sapiens' integration with technology. The participants were asked whether they thought it would be better for society. Do they consider it as a rebellion against God to develop such technology? The main themes from the responses provided are listed in Table 16.

Table 16: Responses to views on Techno Sapiens

Responses	*Number of Occurrences*
I am concerned	8
I am not fearful about this	2
I will not support it	2
When it happens, God will work through it	3
It depends on how it will be implemented	2
It will be a rebellion against God	5

Adding things beyond what God gave is not good	2
We should not stretch beyond a point	1

Many participants acknowledged their lack of knowledge and awareness about how Techno sapiens will work. Almost everyone expressed some level of concern regarding this. Two participants explained the concept of useful augmentation to human bodies. For example, wearing glasses is a normal thing, and no one has any issues with it. There could be augmentation, which is done for reasons which are not ethically or morally correct. One participant stated that even though he is concerned, he is confident that God will intervene and control the situation.

God did not create humans as robots and gave them the ability to make decisions. The rebellion against God started with Lucifer, and humans continue to rebel against God. Their making of Techno Sapiens will be a rebellion against God if it crosses the boundaries set by God.

Question 15: AI robots as Moral Agents

The participants were asked if AI robots should be considered moral agents? The responses are listed in Table 17.

Table 17: Responses to AI robots as Moral Agents

Response	*Number of Occurrences*
Yes	0
No	9
Not sure	1

Nine participants said no to this question while one was not sure. Many participants spoke at length, trying to reason how this is even possible. Robots are going to be a reflection of humans, and it will be fake. Robots may appear to be like humans,

but they will not be genuine. Most probably, AI robots will be like pets, and people may treat them in that way.

Since AI learns from data, it cannot have a morality of its own. AI can be hacked and manipulated. One participant said that it is a questionable area, and hence he is not sure about how to respond.

Question 16: Bible suggests limits on the human ability to create.

The last question asked to this group was about their view on the Bible, suggesting any limit on human creativity. The main themes from the responses are listed in Table 18.

Table 18: Response to the Bible suggesting limits on human abilities.

Response	*Number of Occurrences*
Humans are image-bearers of God	5
Humans can create more than what is seen today	4
There is no limit	5
God will put limits if it turns out to be a rebellion	5
We should not use the word create; humans are only inventing, manufacturing, making, etc.	1
God wants people to depend on Him	4
Basic human brokenness wants to be like God. When it becomes an idol, it is a problem.	2

Some participants thought God does not put any limit on humans. Others gave examples from the Bible and explained why they thought God put limits. Humans are created to be image-bearers of God. Whatever humans create will reflect the nature of themselves. In the end, God will judge if humans misuse the abilities given to them.

One respondent took objection to the use of the term create. Humans are only inventing, manufacturing, making, or inventing. He thought the word create should be reserved for the act of God in creation.

Concluding Remarks

Some participants were allowed to give some additional comments in the end. Time limitation did not allow the researcher to offer this to all participants. Almost all participants thought it was a good topic and thanked the researcher for providing an opportunity for them to learn a lot about AI and related issues through this interview. A few acknowledged that they were shocked to hear about people marrying robots. A few others stated that as a Christian leader, they are alarmed by all these issues around AI.

Christians and IT Professionals Responses

There were two more groups of people interviewed. One consisted of Christians who work in the technology field and have a good understating of AI. The second group consisted of people who are technology leaders or professionals who are not committed Christians based on the information researcher. The researcher did not ask for their religious background or view about Christianity. They were made aware that the researcher is doing research related to AI and theology. Interviews were conducted without any reference to the Christian faith.

Twelve questions were asked to both these groups. Six common questions were asked to both groups. There were six different questions. Responses from both these groups are presented together to analyze the response result and also to draw comparisons among these two groups. The goal is to see whether responses are different based on the faith background of a person for the same question.

Common Questions

The following are the six common questions that were asked to both groups. The questions and the responses are provided below.

Question 1: Focus on AI work participants do or are aware. Weak/ Narrow, or do they have any use case for Strong/ General AI?

The participants were asked if they worked on AI and if they did the focus of the work they do. The main topics from the responses are listed in Table 19.

Table 19: Response to AI-related work focus.

Christian Professional Response	*Technology Professional Response*
Focus on Strong/ General AI research	Focus on weak or narrow AI
Focus on Narrow AI	Natural Language processing
Simulating response project	Machine learning
Monitoring dementia patients	Not active work in AI
Learned about AI twenty years ago in college	
Focus in neural networks and self-learning	
Warehouse management, robots, drones, etc.	
Beginner with AI. Working on decision making or prediction AI	
I am familiar	

There was one participant who has done research on AI for many years and stated that her current focus is on General AI. There was another participant who is working in a medical institution and has two active AI projects. One project is for robots to monitor dementia patients, and another one is for simulating human responses. Some participants have recently started working with AI, while some are not doing any active projects on AI currently. All the participants who are working on AI projects are doing Narrow AI. One person doing work on General AI was not doing an actual project but more research work.

Question 2: Define intelligence in AI. Is it similar to human intelligence?

In the next question, the participants were asked about what they thought about intelligence in AI and if they will compare it with intellect found in humans. The main themes from the responses are listed in Table 20.

Table 20: Response to the question about intelligence in AI.

Christian Professional Response	*Technology Professional Response*
We do not have a definition of intelligence	Intelligence in the machine is very different. We train machines, but use cases are narrow.
It is hard to define	AI cannot be used for multiple use cases. It will not be possible in our lifetime.
There is some intelligence in weak AI	Some similarities but not the same. AI can be knowledgeable and skilled at making decisions
AI intelligence is at a basic level	AI is not close to human intelligence
AI intelligence is artificial and human developed	There is a difference in the breadth of learning
Any intelligence in AI is because of human intelligence	Someday it may become similar, but we are very far away from that.
AI is a subset of human intelligence	
Machines have more processing capacity	
Humans can respond to unfamiliar situations, but AI will fail if it is not trained.	

Many participants were not sure about how to define intelligence and said it is hard to define. Some thought AI could have self-awareness, emotional intelligence, and logical functions. All responded that intelligence in AI could not be compared to that of humans. AI is learning from humans, and there could be some functions that AI can do faster than humans. Human intelligence is different as it can respond to unfamiliar situations. The use case for current AI developments are not advanced to that extent, and it is too early to even compare with humans.

Question 4: View about Artificial Emotional Intelligence. Can it be equated with human emotional intelligence?

Interview participants asked about their thoughts on Artificial emotional intelligence. The main themes from the responses are listed in Table 21.

Table 21: Response to view about Artificial Emotional Intelligence.

Christian Professional Response	*Technology Professional Response*
There are three things about emotions - exhibiting, recognizing other people, and feeling. AI can do the first two things to some extent.	No empathy. They can mimic empathy in a narrow case.
AI cannot have feelings.	AI will continue to grow. It will become more intelligent than humans.
Robots can calculate but not feel the emotion	
Certain aspects of emotions can be programmed	
I think so if not exact, but very good developments can happen in this.	
AI can be taught to show empathy. It will be like someone behaving in the office. It will not be like parents or siblings feeling.	

One participant stated that there are three aspects of emotions- exhibiting, recognizing other people, and feelings. AI can use facial and voice recognition to identify a person and exhibit emotions. AI cannot feel like humans and have a physical feeling. Robots can calculate, and it can be programmed to exhibit feelings. The feelings exhibited by AI robots will not be real. At the workplace, people are expected to show some behaviors. They can show empathy, but it will not be the same as one felt by family members. AI can simulate emotions. Some participants expressed their difficulty in comprehending how Artificial emotional intelligence will work.

Question 6: Concerns related to ethics with AI?

Participants were asked about their concerns related to ethics with AI. The main themes from the responses are listed in Table 22.

Table 22: Response to concerns related to ethics with AI.

Christian Professional Response	*Technology Professional Response*
Substituting human relationship with machines	Many concerns. Hacking. Training of the model
Christianity is relational	Ethical is more related to the use of AI. It could be used in a bad way
Sex robots and social media use.	It depends on the people who program. They could do things that could be harmful.
Autonomous machines used for warfare. Machines are killing humans.	Send Robots to church to learn.
Ethics has changed in 20-30 years. It is not good. Society at large has embraced sin as a lifestyle	Economic and people are replacing jobs. It can go deeper.

Ethical concerns depend upon the person who designs it	AI is growing fast, and they may not have ethics.
There will not be any real freewill with AI	Using AI for illegal activities is going to be a big market.

Participants expressed many concerns. The main concerns were around human and machine relationship. One responded that he thinks ethics is controlled, and in the past, Christians were involved in society. There should be a review board to review AI like other institutions and industries have. AI is doing what it is programmed to do, and hence it comes back to the ethics of people developing it. One respondent joked that AI robots should be sent to the church to learn ethics and morality. Some participants also shared concerns about hacking.

Question 7: Views on "Technological singularity."

"Technological singularity" is the idea that AI will surpass humans in every intellectual and creative dimension, leading to incredible advances. The participants were asked if they thought it is possible. The main themes from the responses are listed in Table 23.

Table 23: Response to Technological singularity.

Christian Professional Response	*Technology Professional Response*
Not sure. We may be able to solve some problems	Not in our lifetime
We are nowhere near.	Maybe sometime in future
Tricky question. It depends. It is possible if a Robot is coded to kill everyone. You cannot do anything. You are killing yourself.	It depends on what you give control. Initially, I did not think it is possible. Now feel it is possible.
AI will never get better than humans	It is possible from a logical standpoint.

One responded that robots are struggling to walk after 60 years of research. Technological singularity may not happen soon. AI can learn intellect, but creativity is different. AI can do things that need computational power, but writing a book or song is different, as is it drawn from life experience.

Question 11: View on AI robots considered as Moral Agents

Participants were asked if AI robots should be considered as moral agents. The main themes from the responses are listed in Table 9.

Table 24: Response to view on AI robots considered as Moral Agents.

Christian Professional Response	*Technology Professional Response*
No	No
In our lifetime, it may not happen.	They can be based on somethings. Can dogs who do good be called moral?
I will not agree that AI can make moral decisions.	How will you make them accountable
Morality is engraved in humans. We cannot fabricate.	It depends on the morality of the organization and the programmer.

Unique Questions

Question 3: Do you think someday it will be possible to create Robots/ Machines which will be conscious? Christian professionals were also asked how did you see it in the light of humans created in the image of God?

The main themes from the responses are listed in Table 25.

Table 25: Response to Robots with consciousness.

Christian Professional Response	*Technology Professional Response*
Do not believe it. It has to do with life.	Not in our lifetime. May be beyond our lifetime. Very low in the next few hundred.
There is no way for machines to evolve	We may be able to create ones that will appear conscious. It may not be indistinguishable someday, but not real.
What God created is unique. Humans will not create everything including spirit	It will not have hurt feelings.
We cannot create as how God created.	
Personally, I do not believe it is possible. Humans are unique.	

Question 5: Do you think that in the future, having robots as a friend or married partners will be a normal thing in society? Christian professionals were also asked if it troubles them as Christian?

The main themes from the responses are listed in Table 26.

Table 26: Response to marrying Robots.

Christian Professional Response	*Technology Professional Response*
It will increase. It is unfortunate. We are seeing the beginning of sex robots.	No
Just like pornography, money is there, and it will increase	Yes. I do think when I see people treat a pet. People are attached to phones.
Sex robots and pornography will create the worst form of idols	It will happen. If it is easier to get a robot as a companion.
It troubles as a Christian.	
This is going to be a reality. People do worse. I do not agree.	
It is possible and already happening.	
It is concerning. God's concept is the union of man and woman and not a machine.	

Question 8: Solitariness is the state of a person who lives alone or in solitude or avoids the society of others. Do you think it will increase as more advancements are made in Robotics and AI? Christian professionals were also asked if they thought it would work based on how God has created humans?

The main themes from the responses are listed in Table 27.

Table 27: Response to question about Solitariness.

Christian Professional Response	*Technology Professional Response*
We already see an increase in Solitariness	Even if people are playing, then they are doing with others. How people interact may change.
College common spaces are emptier	It will be an extension of current issues. It is awkward to talk face to face.
Students are playing or in room	
Social media is a partial relationship	
Biblically I doubt it will work. God created us in a way that we need to interact with. Now we are going towards meeting our own self-centered will.	
In Japan and China, kids are addicted to the Internet, and they live in an Internet café.	
People want to surrounded by what is comfortable and do not want to face negativity or adversity.	

Question 9: "Techno Sapiens" is a new intelligent species resulting from Homo sapiens' integration with technology. Do you think it is better for society at large? Christian professionals were also asked if it will be a rebellion against God on humans' part?

The main themes from the responses are listed in Table 28.

Table 28: Response to Question about Techno Sapiens.

Christian Professional Response	*Technology Professional Response*
God designed humans in his image.	It is good. It makes life easier. It will be a good thing.

We are creators, and it is fine to create.	Not good for society
This is dangerous.	This also applies to medical research.
It can be powerful but spiritually dangerous.	If everyone has access to technology, it is fine. If it segments people, then it is horrible.
Overall it is not going to help.	
It will be a rebellion against God	
People would think it is better for society, but personally, I do not think it is good for society.	

Question 10: How do you think the problem with biased AI based on the training can be solved? An example is a self-driving car that may hit five children to save the passenger since it is trained to keep the travelers safe at any cost. Christian professionals were also asked if they thought it is related to the bias which humans have?

The main themes from the responses are listed in Table 29.

Table 29: Response to question about Bias in AI.

Christian Professional Response	*Technology Professional Response*
I don't think it will be solved	The series of lawsuits we will determine what the rules are. We will have issues in the beginning, and then it will be solved.
As long humans have a bias, it will be there.	I do not have a good answer. It cannot be removed completely.
No person is free of bias. Intentional versus programmed bias.	AI will solve it to be better than humans
As long as humans are building, there will always be an issue.	Fixing bias in AI will take a long time.
Bias is in data and algorithm. Humans are creating it, and there will be bias. So far, not successful.	

Question 12: As a Christian, are you concerned or excited about all the developments related to AI?

Many participants responded that they are concerned, and humanity should move forward with care. There should be recognition of both the downside and upside. Technology should not control humans. Some responses that they are excited as the coming of Jesus is near. Concerns are related to human rebellion against God's design in AI. There were also concerns raised about privacy.

Question 12: Should we be investing in creating friendly AI to protect humans from unethical Super-Robots?

One participant responded that humans should not invest. Someone else responded that humans should if they can identify lousy use cases of AI. If there is a war between AI and other AI, it will be a difficult situation. One participant thought that people are already investing in technology to protect data and networks.

Conclusion

The survey and the interviews provided valuable data and insights which were very beneficial for the project. The survey gave insight into how young Christians are thinking about technology and AI. The survey also provided information about challenges with convictions and the need to address issues related to human relationality and Christian ethics among young Christians.

The interview responses gave insight on how church leaders are viewing AI and their lack of awareness about various challenges related to AI. The interviews also gave data about the concerns and how some pastors may deal when issues arise within their ministry context. Interviews conducted among technology professionals gave insight on active AI projects and how companies, where they work, are moving forward with AI projects. One participant expressed concerns about his children finding a job when they grow up as AI takes over many jobs done by humans today. A more detailed summary of data and analysis is added in chapter six.

CHAPTER SIX: EVALUATION AND FRAMEWORK TO ADDRESS CHALLENGES WITH AI

Evaluation of the Project Design and Implementation

This project had components of grounded theory design and utilized closed-ended surveys and open-ended interviews to produce data that was analyzed and categorized thematically to show the challenges and issues related to AI from a Christian perspective. The research included literature reviews, and data was collected using surveys and interviews. This chapter evaluates the project design and discusses the results of the study.

Project Design Strength

The researcher knew theology and AI, and it was a strength to the project. At his workplace, the researcher has worked on AI-related projects. The researcher started this project after researching the latest developments in AI, and hence he was aware of the main issues. The researcher was executing his pastoral responsibilities while working on this project and hence was actively engaged in ministry at a local church. The researcher was also giving leadership in a student ministry and hence has insight into some of the issues faced by young people in different countries. The researcher himself had some deep questions, and hence working on this project felt like working for personal clarity and self-edification. All these reasons can be seen as strengths from the researcher's point of view.

There are a lot of developments and updates coming out about AI daily, and it kept the project interesting as there was always much new information to be considered

to be added to this project. Many pastors and leaders are not aware of the topic of this project, and it always led to interesting conversations.

The researcher has access to ministry staff who were directly working with students in different countries. The researcher was able to send surveys to a targeted audience, and it helped with getting more responses than initially expected. The researcher was able to get a diverse response to the survey, and it was not limited to one country. It was a strength to the project.

The researcher had access to people who are working on AI, and conducting interviews with them was beneficial for this project. Interviewed pastors and ministry leaders came from a diverse background. There were pastors from mega-churches and also pastors who are pioneering new churches. There were also senior pastors and youth pastors who were interviewed. Interviews were conducted with pastors who are ministering to different ethnic people groups. Many interviewees thanked the researcher for helping them understand about AI and challenges through the interview questions and the interview. Authors who have published books on AI were part of the interviewees, and they provided much information that was not discovered during the literature review. These interviews with authors were very beneficial for the project.

Project Design Weakness

Much of the literature on the relation of theology and AI is based on outdated understandings of AI. The researcher had to rely on some technology related websites for information and could not find many academic journals with information related to the focus of this project.

The researcher was not able to get time for interviews from some pastors and ministry leaders who could have brought more diverse thoughts. Some youth pastors responded positively to the interview request but never responded to requests to schedule the interview. Some responded that they had no idea about AI and hence declined to give an interview.

Another weakness was the time constraint on the part of some of the interview participants. There were few interviews where all the questions were not covered as the participant had other appointments. Since some concepts were new to the participants, for some questions, the researcher had to explain the terms and concepts, and it took some time for some participants to process and respond.

All the issues related to AI could not be evaluated against the Action Command Outcome (ACO) Theological Framework developed as part of this project. Some selected issues were evaluated and addressed. As more details and issues emerge about AI, the researcher plans to evaluate them against the ACO theological framework.

Research Findings and Discussion

The field research of this project produced some significant findings. Those findings helped derive the conclusions presented in this chapter. The finding confirmed that the problem statement of this project is valid. Reach of AI in human society is significant enough that it will make impacts, and churches and ministers have to be prepared to deal with it. A theological framework is required, and any attempt to address the issues has to be grounded on a strong biblical foundation. Topics related to humanity, ethics, morality, and God must be evaluated and answered. Christianity cannot ignore this vital subject, which is growing at a fast phase and raising many questions.

Conclusions from Biblical and Theological Reflections

AI is a technology, but it is different in many ways compared to other innovations humans have seen in recent years. AI has raised questions around morality, ethics, human identity, creator, and creativity. A biblical and theological review is required to answer these questions. The Bible has the details about the creator God of the universe and how everything came into existence. Humanity can find the purpose and meaning of their existence by understating what the creator intended for them.

Many attributes of God are unique to him, and it is crucial to understand them to appreciate and worship him. When humans rebel against the creator by ignoring who he is, it will land them in an awkward position. History has taught humankind again and again, that rebellion against God will have its consequences. Humans are created in the image of God. Any attempt to elevate something else to that level is going to produce undesirable results. When talking with AI and robots, attempts have been made by many to elevate them to the status of humans, and in some cases, they are addressed like humans. Human identity is unique, and mixing it with AI is not a good idea.

God created humans as relational beings. First, humans were created with the ability to relate to God and maintain a good relationship. When the man could not find a suitable partner among other created beings, God himself made the woman. The purpose was to have dominion and authority to rule over the creation. Humans were created to have relationships with other humans. Fellowship with other humans and community life are all concepts found in the Bible and intended by God for them to enjoy. Any relationship pursued out of the limits set by God is not beneficial for humanity. Humans are not created to have an emotional and physical relationship with machines.

God gave humans the ability to invent and create things. Creativity is a gift of God to humans. Humans do not have a creative ability similar to God. Any claims of equality with God because of inventions like AI is not valid. Humans have limitations, and can never equate to God. When humans get together and make attempts, they can come up with incredible things. It is possible because God created humans in his image, and it is with the help of God that they can do anything. The ability and the knowledge to invent and make technological advancements are not restricted to people who know and acknowledge God the way they ought to do. The universal gift of knowledge is given to all humans by God. John Calvin wrote about God giving the common gifts of knowledge in *Institutes of Christian Religion.*[98] He wrote:

> Therefore, in reading profane authors, the admirable light of truth displayed in them should remind us that the human mind, however much fallen and perverted from its original integrity, is still adorned and invested with admirable gifts from its Creator. If we reflect that the Spirit of God is the only fountain of truth, we will be careful, as we would avoid offering insult to him, not to reject or condemn truth wherever it appears.

The fallen humankind still has abilities given by the Spirit of God. Calvin also added that "if the Lord has been pleased to assist us by the work and ministry of the ungodly in physics, dialectics, mathematics, and other similar sciences, let us avail ourselves of it, lest, by neglecting the gifts of God spontaneously offered to us,"

AI has the potential to help humanity in many ways. Humans will be able to make better AI than that seen today. AI should be used for functional purposes that do not violate the commands of God. Any attempt to reject the commandments of God will not

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[98]John Calvin, "Institutes of Christian Religion," *Calvin's Institutes*, accessed January 10, 2020, https://www.ccel.org/ccel/calvin/institutes.iv.iii.html.

succeed beyond a point. All attempts to use AI for evil purposes will not be suitable for humanity and will have its consequences.

Conclusions from Literature Reviews

The use of AI is growing, and new applications of AI are getting introduced regularly. Most companies now invest in AI technology, and technology companies cannot survive without having some strategy around AI. Many applications are getting updated with AI capability. There is much hype around AI. Many claims are made that are based on ambitions and not on facts. There are no real examples of general or strong AI. There are a lot of narrow or weak AI applications. Any new claims have to be evaluated before coming up with conclusions since there are many ambitious AI projects.

One of the main challenges with AI is the lack of enforcement of policies that govern the development and implementation of AI. There are policies suggested, but they have not been made as a standard for industries working on AI. There is no regulatory body to monitor or enforce policies related to AI. Lack of regulations is a real concern as many use cases that are not beneficial, and have related ethical and moral issues which are pursued without any restrictions. There are many policies and principles recommended. The researcher is hopeful that the government will get involved and come up with enforceable policies to govern the development and use of AI. The companies who are working on AI should be proactive in reviewing AI projects to ensure that it will not result in any form of harm to humanity. The researcher thinks that Christian organizations which are engaged at a national level with the government like the National Association of Evangelicals (NAE) should take up this issue and work towards ensuring that the illegal use of AI does not happen at a massive scale.

AI will be able to process things faster and will be more efficient than humans in many scenarios. AI machines doing human jobs more efficiently will result in job loss for many and will have economic impacts. As a society, how will humanity operate if there is more automation, which will cause people to lose their jobs? Jobless situations will create economic stress, and it has to be figured out. How people work and where they work may change, and the older population may find it hard to keep themselves employed depending upon their current job. AI has many possibilities, and people engaged with human services should keep an eye on changes that may be happening due to more usage of AI.

AI will impact religions and especially Christianity, in many ways. One of the main areas of AI focus is on robotics and virtual agents. Some of these are designed to take the place of other humans. As society gets more comfortable with having conversations and relations with nonhuman entities, it will have an impact on churches whose appeal is community life. There will be issues of loneliness coming to the surface again as these machines will fail to meet the real emotional and physical needs of humans. The researcher is convinced that even though people will get bored with robots, they will stick to it based on other trends noticed nowadays. According to the United States Census Bureau, marriage rates are dropping.[99] People are not committing to a long-term relationship. AI may provide temporary gratification in many scenarios.

[99] "U.S. Marriage and Divorce Rates by State, " *United States Census Bureau*, accessed on January 10, 2020, https://www.census.gov/library/visualizations/interactive/marriage-divorce-rates-by-state.html.

God created humans so that they can live in a humanistic society. The current pursuit of humans is for a more productive society. There are very few who are analyzing the use of AI, keeping the bigger purpose and design of humans in view. This issue has to be addressed in the future as the main fabric of society is impacted. Many think that virtual relationships are going to be okay, and humanity will survive with it. However, based on how humans are created, it will not be reasonable.

Many claimed that AI would help with the issue of bias. There are, already, examples of AI inheriting bias from humans. As new AI applications are adopted, the possibility of bias in AI must be acknowledged. Dealing with core issues of AI is not that difficult, but pursuing the specific implementation of AI can get challenging due to the updates happening frequently. New tools are coming out regularly, and much research is focused on AI. There is much AI research happening in the medical field, which can prove very beneficial to humanity. At the same time, implementations of AI which dehumanize individuals and have ethical and moral issues related to it should be reviewed to ensure the safety and security of humans.

Conclusions from Qualitative Research

After the literature reviews, data related to the project was collected by surveying Christian college students, between the ages of 18-34 from seven countries. The researcher sent the survey to targeted audiences, and one hundred and forty-seven participants took the survey. Many participants responded that they think they are addicted to technology at some level. The survey results also showed that the majority of young people are aware of AI.

The survey results also revealed that the younger generation is taking AI seriously and not underestimating the fact that it can replace humans in different ways. Many admitted that they are willing to consider robots as a friend. The relational aspects of humans and how humans who were created in the image of God should view machines made by humans need to be addressed based on the responses received.

This survey response shows acceptance of the fact that in the future, there can be emotional and physical relationships between humans and robots. Christian students provided this response, and it is alarming to see that twenty-eight students responded that they are willing to attend religious services where robots will perform rituals like prayer, preaching, and teaching. The responses also showed that some young Christians believe in science more than God due to advancements they see in science and technology. The results suggest that science and technology advancements are influencing some Christians to think that those who follow God are blind, and they do not understand the realities of science.

Interviews were conducted to gather information from different groups of people to understand how they view AI and the challenges encountered. Three groups of people were selected for the interview. The first group consisted of Christian ministry leaders and pastors. The second group consisted of Christians who are either doing work with AI or have good knowledge about the subject. The third group had Information technology professionals who are not Christians but have knowledge of AI.

The interviews provided much information related to AI from different perspectives and people from different professions and belonging to different age groups. It was clear that many Christian leaders and pastors are not aware of the challenges

related to AI. Some issues need to be analyzed, and appropriate responses need to be provided to the people who ask questions. Interviews conducted among professionals made it clear that most projects related to AI are dealing with narrow use cases. Everyone, irrespective of their faith background, acknowledges that there are ethical issues that cannot be ignored. Christians are looking at many issues from a biblical viewpoint and expressed more concerns. One participant from a non-Christian background stated that there is no issue with kids having a virtual relationship with machines, and this can be seen as similar to having real friends. The main themes were related to ethics, morality, and relationality of humans. People losing jobs due to AI was shared as a concern by many participants.

Lack of AI Awareness

Since deciding to do this project, the researcher has had many conversations about AI with people involved in ministry, apart from the interviews conducted. The researcher found that people are using AI applications but are not aware of other developments and the issues related to AI. Some people tried to dismiss the conversation by stating that it is just a machine, and it can be unplugged, or it will run out of battery. The researcher felt that many were not understanding the concerns and, therefore, dismissed them casually.

The researcher was encouraged to see that many Christian organizations have come out with a statement on AI, which was discussed in Chapter three. Many people have started talking about this subject, and there will be more awareness among Christian leaders in the future. The researcher recommends that there should be more initiatives to bring awareness about AI-related issues and people who know the subject should write and talk about it. As the general public is adopting technology without even realizing

what they are doing, the church must get prepared to answer the questions raised by the members and outsiders. The younger generation is growing up with a different set of values, and they view technology differently due to a high exposure from a very young age. The church, at large, should not ignore AI as virtual assistants like Alexa have become part of most living rooms, bedrooms, and even bathrooms. These devices hear what people say all day, and many devices are also recording videos.

The researcher was doing a home visit once and was about to pray along with the family. Something was said, and first, Alexa responded, and later Google home responded. The researcher had to say, "Alexa stop" before praying. This incident is an example that shows how people adopt new technology and fail to put safeguards. This project has highlighted some ethical, moral, and relational issues. Those issues should be shared, and pastors and parents should be prepared to address them in the correct biblical-theological manner. As Peter encourages Christians, "but in your hearts honor Christ the Lord as holy, always being prepared to make a defense to anyone who asks you for a reason for the hope that is in you; yet do it with gentleness and respect" (1 Pet. 3:15). Christians should be prepared to answer as AI has the potential to influence the next generations and challenge their faith in various ways.

Action Command Outcome (ACO) Theological Framework

This project design had literature reviews, field research, and the goal to develop a framework to address the challenges raised by AI. The researcher decided to focus on the attributes of God as addressing challenges with AI requires a strong foundation based on the understating of the creator God. The researcher felt that after providing all the information and raising awareness about AI, it was essential to have a framework that can

be used beyond this project in the future. There is a lack of awareness among Christian ministers about AI, and there are many questions raised by people as there is wide adoption of new technology. The questions have to be answered from a biblical viewpoint.

Therefore, the researcher developed a framework and named it as "Action Command Outcome" (ACO) Theological Framework to evaluate different issues. It was not adapted from any other available frameworks. The researcher had heard about the concept of different types of actions that humans can take. When discussing this research project with the thesis advisor, the concept of good and evil outcomes was evaluated. The ACO framework is the result of the researcher's evaluation of different challenges related to AI and based on the data collected during the research interviews.

Actions	**Command**		**Outcome**	
	Explicit	**Implicit**		
Essential			Very Good	
Desirable			Good	
Tolerable			Not Good	
Forbidden			Evil	

Figure 20: Action Command Outcome (ACO) Theological Framework.

This framework starts with the action in question. The action is validated against the commandments found in the Bible, which could be explicit or implicit. The action is then evaluated to check if it is essential, desirable, tolerable, or forbidden. Based on where it falls, it tells the outcome of the action based on what the Bible commands. Following is an example of the ACO Theological Framework:

Table 30: ACO Theological Framework Example

Actions	*Command*		*Outcome*
	Explicit	*Implicit*	
Essential	Love (1 John 3:11)	Help an online friend. (1 John 3:11)	Very Good

Desirable	Support Missionaries (1 Cor. 16:1-3)	Sharing words of encouragement on social media (1 Thess. 5:11)	Good
Tolerable	Wasting time not doing anything. (Eph. 5:16)	Spending much time watching Television (Eph. 5:16)	Not Good
Forbidden	Adultery (Matt. 5:27-28)	Watching Porn (Matt. 5:27-28)	Evil

Figure 21 example has actions that are mapped against the action type under the type of command. The Bible references are also added along with the action to be validated. The actions under explicit command are the ones directly found in the Bible. Some of the commandments may be essential while others fall in a forbidden area, and others fall in the middle. When an action is not mentioned in the Bible directly, it is added under implicit commands. Helping an online friend, posting encouragement online, watching television, and watching porn is not directly referenced in the Bible. There are Bible verses that implicitly deal with the action. Biblical exegetical and hermeneutical skills are required to use this framework correctly.

ACO Theological Framework - Issues Raised by AI

AI is not referenced directly in the Bible. During the research interview, one respondent shared how he thought that AI robots are referenced directly in some chapters of the Bible. The researcher did not find any explicit references to AI in the Bible. Below is an example of how some of the issues related to AI are mapped in the ACO Theological Framework.

Table 31: ACO Theological Framework - AI Issues.

Actions	*Command*		*Outcome*
	Explicit	*Implicit*	
Essential		Use of AI in a child rescue operation (Ps. 82:3-4)	Very Good
Desirable		AI in cancer detection (1 Tim. 5:23)	Good
Tolerable		• AI-generated sermons (2 Tim. 4:1-2) • AI in Warfare (Matt. 5:44)	Not Good
Forbidden		• AI Sex Robots (Gen. 2:18-25; Matt. 5:27-30) • AI granted status similar to humans (Gen. 1:26-28) • Worship of AI (Ex. 20:3-5) • AI used for deceiving people (Prov. 6:16-19)	Evil

The researcher selected eight actions or topics related to AI and mapped it in ACO Theological Framework. All the actions were mapped under implicit commands. The supporting Bible verses are also provided. Some of the issues can be mapped against more than one action depending on how the how a Bible verse was interpreted. The data from the research interviews were used to complete the ACO framework for issues related to AI. The responses from ministry leaders and pastors were used as the basis to come to the conclusions along with the study undertaken by the researcher on these topics. The good use of AI was seen as beneficial by many respondents. Use of AI sex robots, AI granted a status similar to humans, and any worship of AI was stated as evil by many respondents and especially by those who profess faith in God.

The ACO framework can be used as a tool when dealing with ethical and moral issues related to AI. It can be presented as a tool when teaching college students and adults about faith, religion, morality, ethics, and technology. The researcher is confident that this framework can be used for other topics also. This framework can also be used as

an evangelism tool to have a more in-depth conversation and can be started with general moral standards of different nations and cultures. The researcher envisions, drawing a parallel between moral laws followed by humanity and the moral laws found in the Bible using this framework. Using the ACO framework can lead to meaningful conversation and will provide witnessing opportunities.

The ACO framework does not provide any specific guidance to the concerns related to AI and is not designed to get to the details of one issue and provide guidance. There are many concerns related to self-driving cars that were raised by the interviewees. Self-driving cars itself may fall in the desirable and good category, but there are concerns related to self-driving cars that are not considered by the framework. A topic that was discussed during interviews was about self-driving cars killing humans. That is a serious concern, but that itself does not make self-driving cars evil unless there is data that show many accidents caused by these cars. A research project can be done to deal with different issues connected to a concern with AI and come up with guidance, along with the outcomes provided by the ACO framework.

Action Plan: Knowledge, Faith, and Love

As the researcher spent considerable time exploring the attributes of God and other biblical topics covered in this report, one theme emerged. Dealing with the issues related to AI and using the ACO theological framework is not intended towards gaining more knowledge. ACO framework can help address issues related to AI to a large extent by the use of knowledge. Dealing with issues based on knowledge may not provide the outcomes and acceptance expected from individuals. Faith in the creator God is essential.

Individuals need an understanding of God, as revealed in the Bible. A study on attributes of God can help with that.

Love for God and other humans is also very critical for someone to accept the risks associated with many usages of AI. Apart from having a love for God and humanity, there can be many implementations of AI that will cause harm. There will not be a reason to be concerned about AI itself. The concern should be more about companies and people who make AI, which may put another human at a disadvantage or make them vulnerable. Any conversation around ethics related to AI has to be combined with the knowledge, faith, and love. The researcher acknowledges that it is not possible to have faith in God and real love for God and other humans unless the Holy Spirit works in a person. For a Christian, raising awareness about issues related to AI has to be prayerfully pursued, as it is a critical issue for humanity at large. AI-related issues are not just for church. As people are commanded in the Bible to stand for justice and equality, the task is more than informing others (Isa. 1:17). It is essential to have knowledge of AI, faith in God, and love for God and humanity to be successful in this endeavor.

Research Project Conclusions

This research project provides knowledge of AI at a level that will help in understanding the concerns. There are potential moral and ethical issues that need to be monitored and evaluated as new applications of AI emerge. Biblical and literature reviews provided the foundational knowledge to look at AI from a theological perspective. Data collected through the research highlighted many of the concerns and challenges, including a lack of awareness about real AI implications among Christian leaders and pastors. The lack of full commitment to the creator God among many young Christians was evident in the responses to the survey. The ACO Theological framework

developed as part of this project can be used as a tool to evaluate issues existing with AI and any new concerns which may come up. Christians should not reject AI outrightly as the source of all knowledge is God, and there are many valuable uses of AI that will benefit humanity. At the same time, people should be cautious and careful as AI has the potential to cause harm to humans and society.

CHAPTER SEVEN: PERSONAL INSIGHTS AND FUTURE RESEARCH

Suggestions for Further Study

AI technology is changing, and many developments are happening daily. As the researcher was trying to complete this project, one challenge encountered was that new, relevant information was coming out daily. The challenge was to stop adding more details and keep the focus of this project on the problem statement already identified. The researcher has identified many topics that can be pursued for further study.

This project focused on the attributes of God. The human relationality could not be explored at depth, and it is a crucial topic for AI. As the researcher is concluding this thesis report, a news report which came out a week ago is worth mentioning here. Samsung backed Neon was announced at Consumer Electronics Show during the first week of January 2020. Neon's slogan is "more human than human." Neon avatars are designed to be AI companions, which could be mistaken for humans. CEO of Neon, Pranav Mist, stated at a press conference that “Neon is like a new kind of life. There are millions of species on our planet, and we hope to add one more. Neons will be our friends, collaborators, and companions, continually learning, evolving, and forming memories from their interactions.”[100] When an implementation of AI is viewed as

[100] David Lump, “Samsung's Neon avatars are designed to be AI companions you'll mistake for humans,” *TechRadar*, January 10, 2020, accessed January 12, 2020, https://www.techradar.com/news/samsungs-neon-avatars-aim-to-be-ai-companions-youll-mistake-for-human.

another species and is created to appear and behave like humans, the subject of the relationality of humans can be undertaken as a separate study.

Virtual agents and chatbots have become common nowadays. Amazon has Alexa and Microsoft named the virtual assistant Cortona which is now part of millions of houses and computers. Initially, people questioned the name and why are these machines given human names. Now someone talking to Alexa is a common thing. The researcher was in a conference where someone presented about a chatbot with a human name, and it was supposed to make users think that they are chatting with a real human. Some people stood up and questioned the ethics behind fooling humans. There is a generation growing up for whom these virtual assistants are a normal part of life. A study needs to be done on the human relationship with virtual assistants and how this will have an impact on society when there is a generation who will talk and interact more with virtual agents than human beings.

There are many ethical issues related to AI. Some of the issues got covered or referenced in this project. A detailed study would be beneficial. All companies are investing in automation with AI. As a result, people are losing jobs, and many claim that people need to change their jobs. Many of the applications of AI is helping in creating a productive society. Human interaction and dependency are reduced, and a study of how a productive society will not help with creating a more humanistic society will be beneficial. It is a critical subject considering the commands found in the Bible about human relationships and fellowship and has economic implications.

As AI is getting adopted in many fields, churches and ministers have started exploring it. Some religions are already using it. There are areas where AI can be used to

help with different ministries and for sharing the gospel with people. A study about AI adoption in ministry and guidelines will be helpful to avoid issues that can come up later. Policies and procedures which should govern the use of AI in ministry. If a church starts using facial recognition for attendance, it can be a type of surveillance if measures are out in place. The use of AI in pastoral care is another topic that will have significance in the future. The use of AI in sermon preparation may not be an issue in many churches but will be a topic of interest and a sensitive one in other places.

There are many topics related to AI that can be considered for further study. The study of the doctrine of sin and AI was not conducted in detail as part of this project. It is a topic of study which can be undertaken in the future. The use of AI is growing and effecting humanity with the potential of social and societal impacts. The church cannot ignore it, and the researcher is expecting many more topics of concern to arise in the future.

Personal Insights

The main reason the researcher pursued doctoral studies was to be better trained and equipped for ministry responsibilities entrusted by God. A goal was to grow in orthodoxy and orthopraxy. As this thesis project progressed, the researcher was intentional in exploring subjects that will result in personal growth as well as that which is required for the project. During the literature review, the study of the attributes of God was beneficial for the researcher to grow in personal devotion and worship, which has also resulted in an admission that the God of the Bible is so great, and humans can only know what has been revealed. This experience has resulted in personal spiritual growth and more confidence in undertaking research projects.

This project took a lot of dedication and many long hours of data collection, analysis, and synthesis. The whole experience was challenging as the researcher was balancing between a fulltime job, church ministry, and other ministry commitments. The project was energizing as many issues addressed in the project comes from the researcher's personal experiences. The project experience has helped the researcher in understanding some of the potentials for undertaking other initiatives which will benefit the church at large after this project is completed. This project helped the researcher to carve out time from a busy schedule to work on things that will have more impact and strategy from a long-term perspective. Simple things such as scheduling time and finding a place where work can be done without distraction and with a greater focus was discovered as the researcher worked on this project.

As part of the project, the researcher had to write to people who are experts and was surprised by the willingness of many to give an interview and talk about the topic. It was the first time that the researcher has done something like this and has helped the researcher to understand the benefit of reaching out to people who have written about topics and having conversations with them. The interviews conducted helped the researcher to know many leaders and pastors. The conversations were very beneficial, and many have expressed interest in having more conversations and also seeing the report once it is completed.

This project also helped the researcher to have numerous conversations with people at the workplace about the project, and many were surprised to hear about any connection between theology and AI. It provided many opportunities to have conversations that would not have been possible otherwise. The researcher is excited

about the opportunities to talk to people about the issues addressed in this project after the completion of this project is shared with others.

This project is going to help the researcher while traveling to other countries and ministering among the students surveyed. As ministry initiatives are planned, input from the survey will be used in selecting topics. The researcher also plans to use the insights from this project in other ministry opportunities. This project helped the researcher to develop more clarity with thoughts, which is helping with communication, writing, and explanation. The ACO Theological Framework will be used in different ministry contexts.

The researcher is thankful for God's favor in all phases of this project. There were some challenging situations that the researcher encountered in ministry and personal time during the execution of this project. God's grace and provision were evident during those times. There were prolonged times of sickness in the family. Some significant changes happened in the workplace. As the researcher reflects, clearly the hand of God was evident through all circumstances.

Conclusion

This research project was beneficial for the researcher in many ways, and it has helped the researcher grow in his spiritual walk with God with a greater appreciation of the creator God and also helped with answering some questions which the researcher was wrestling with for some time. It has helped to bring much clarity in thought process and how to view all technology developments with a biblical lens to address the challenges raised. As the researcher continues to work in the field of technology along with doing ministry, it is going to be very beneficial in having meaningful conversations around

ethics and relational issues raised by AI. It will also be helpful when the researcher travels and ministers to young Christians.

This project helped the researcher to get familiar with research methodology and was beneficial in growing educationally. The researcher has plans to undertake writing projects in the future, and this project has helped to get an understanding of how to pursue different aspects of writing. The researcher will continue to monitor the developments happening with AI and will continue to write and talk about concerns and challenges and will address them from a biblical viewpoint. As a result of this project, the researcher has developed a deeper understanding of the attributes of God and grown in appreciation of the purpose and plan for humanity. The researcher has become a more committed follower of Jesus Christ.

APPENDIX A

APPENDIX A: AI SURVEY

1. Country of Residence
    a. USA
    b. Cambodia
    c. Myanmar
    d. Sri Lanka
    e. Nepal
    f. India
    g. Vietnam
    h. Laos
    i. Other

2. Are you a Christian?
    a. Yes
    b. No

3. What is your gender?
    a. Male
    b. Female

4. What is your age?
    a. Under 18
    b. 19 to 34
    c. 35 to 49
    d. 50 to 64
    e. 65 to 79
    f. 80 or older

5. How much time do you spend on your phone or devices connected to the internet every day?
    a. 0-1 Hrs.
    b. 2-4 Hrs.
    c. 5-6 Hrs.
    d. 7-9 Hrs.
    e. 10+ Hrs.

6. Do you think of yourself as having an addiction to technology?
    a. No

   b. A little
   c. Somewhat
   d. A lot
   e. Yes.

7. How will you feel if your phone is taken away for one month?
   a. I would not think much about it.
   b. I would think about it but adjust.
   c. I would definitely miss my phone.
   d. I would feel anxious.
   e. I would die.

8. How familiar are you with artificial intelligence?
   a. None
   b. A little
   c. Some
   d. A lot

9. In future robots with Artificial Intelligence will replace humans.
   a. Strongly Disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly Agree

10. In the future, I will be willing to consider a robot as my close friend.
    a. Strongly Disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly Agree

11. In the future, people will be able to marry robots to meet their emotional and physical needs.
    a. Strongly Disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly Agree

12. I will be comfortable with riding on a self-driving car with no driver sitting in the driver seat.
    a. Strongly Disagree
    b. Disagree

c. Neutral
d. Agree
e. Strongly Agree

13. I will be willing to attend a religious service where robots will perform rituals like prayers, preaching, and teaching.
    a. Strongly Disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly Agree

14. I believe and think that there is a God who created everything, and humans are not on the earth by accident.
    a. Strongly Disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly Agree

15. If humans create robots that are robust, almost human-like, it will be appropriate to call humans as “God” to be worshiped by machines.
    a. Strongly Disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly Agree

16. I worry that when machines start making their own decisions, it will put humans in a dangerous situation with the possibility of large-scale harm.
    a. Strongly Disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly Agree

17. All the advancements I see in science and technology make me believe in science more than my religion or faith.
    a. Strongly Disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly Agree

18. Those who believe in God or religion are ignorant and are blind to the realities of science.
    a. Strongly Disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly Agree

19. Name (Optional)

20. Email to receive a summary copy of this study (Optional)

APPENDIX B

APPENDIX B: INTERVIEW QUESTIONS - PASTOR OR LEADER

1. How familiar are you with Artificial Intelligence (AI)?
2. How much time do you spend on your phone or devices connected to the internet every day?
3. What are your main challenges with technology, which negatively impacts spiritual life? Has anyone in your congregation approached you to get help with technology addiction?
4. How do you view Robots with AI, and how do you think it will impact humans?
5. Are you aware of people marrying robots and having a friendship with AI-powered robots? Is it okay if a machine can meet the emotional and physical needs of a person? How do you think it will impact Christians in the coming years?
6. Some religions have robots performing ceremonies. Many preachers take online help for preparing sermons. To what degree is it morally acceptable to use AI to generate relevant sermons and preach? Do you see any issue with divine inspiration and computer algorithms? Can algorithms be inspired?
7. If humans create robots that are robust, almost human-like, in your opinion, would it be appropriate to call humans a ‘God’ who could or should be worshiped by machines?”

8. Do you worry about all types of AI or just more concerned with AI, which raises moral and ethical issues?
9. Do you think someday it will be possible to create Robots/ Machines which will be conscious? How do you see robotic consciousness in the light of humans created in the image of God?
10. What is your view about Artificial emotional intelligence? Will you ever equate it with human emotional intelligence?
11. Do you think that in the future, having robots as a friend or married partners will be a normal thing in society? If yes, does it trouble you as a Christian leader, and why?
12. “Technological singularity” is the idea that AI will surpass humans in every intellectual and creative dimension, leading to incredible advances. Do you think the technological singularity is possible, based on the advancements you see currently?
13. Solitariness is the state of a person who lives alone or in solitude or avoids the society of others. Do you think it will increase as more advancements are made in Robotics and AI? Do you think it will work based on how God has created humans?
14. “Techno Sapiens” is a new intelligent species resulting from Homo sapiens' integration with technology. Do you think it is better for society at large? Will it be rebellion against God on humans’ part?
15. Should AI robots be considered Moral Agents?

16. Do you think the Bible suggests limits to anything a man can create, including Artificial Intelligence?

APPENDIX C

APPENDIX C: INTERVIEW QUESTIONS – CHRISTIANS DOING WORK RELATED TO AI

1. Where is the focus of the work you do? Weak/ Narrow, or do you have any use case for Strong/ General AI?
2. How do you define intelligence in Artificial Intelligence? Do you see it in the same way we talk about Human Intelligence?
3. Do you think someday it will be possible to create Robots/ Machines which will be conscious? How do you see it in the light of humans created in the image of God?
4. What is your view about Artificial emotional intelligence? Will you ever equate it with human emotional intelligence?
5. Do you think that in the future, having robots as a friend or married partners will be a normal thing in society? Does it trouble you as a Christian?
6. Do you have any concerns related to ethics with AI?
7. "Technological singularity" is the idea that AI will surpass humans in every intellectual and creative dimension, leading to incredible advances. Do you think the technological singularity is possible, based on the advancements you see currently?

8. Solitariness is the state of a person who lives alone or in solitude or avoids the society of others. Do you think it will increase as more advancements are made in Robotics and AI? Do you think it will work based on how God has created humans?
9. “Techno Sapiens” is a new intelligent species resulting from Homo sapiens' integration with technology. Do you think it is better for society at large? Will it be rebellion against God on humans’ part?
10. How do you think the problem with biased AI based on the training be solved? An example is a self-driving car that may hit five children to save the passenger since it is trained to keep the travelers safe at any cost. Do you think it is related to the bias which humans have?
11. Should AI robots be considered Moral Agents?
12. As a Christian, are you concerned or excited about all the developments related to AI?

APPENDIX D

APPENDIX D: INTERVIEW QUESTIONS – INFORMATION TECHNOLOGY PROFESSIONALS

1. Where is the focus of the work you do? Weak/ Narrow, or do you have any use case for Strong/ General AI?
2. How do you define intelligence in Artificial Intelligence? Do you see it in the same way we talk about Human Intelligence?
3. Do you think someday it will be possible to create Robots/ Machines which will be conscious?
4. What is your view about Artificial emotional intelligence? Will you ever equate it with human emotional intelligence?
5. Do you think that in the future, having robots as a friend or married partner will be a regular thing in society?
6. Do you have any concerns related to ethics with AI?
7. Do you think technological singularity, which is the idea that artificial intelligence will surpass humans in every intellectual and creative dimension, leading to incredible advances is possible based on the advancements you see currently?
8. Do you think that Solitariness, a person who lives alone or in solitude, or avoids the society of others, will increase as more advancements are made in Robotics and AI?

9. Do you feel Techno Sapiens, a new intelligent species resulting from Homo sapiens' integration with technology, is better for the society at large?
10. How do you think the problem with biased AI based on the training be solved? An example is a self-driving car that may hit five children to save the passenger since it is trained to keep the travelers safe at any cost.
11. Should AI robots be considered Moral Agents?
12. Should we be investing in creating friendly AI to protect humans from unethical Super-Robots?

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