

22D MORE ON AI AND ROBOTS

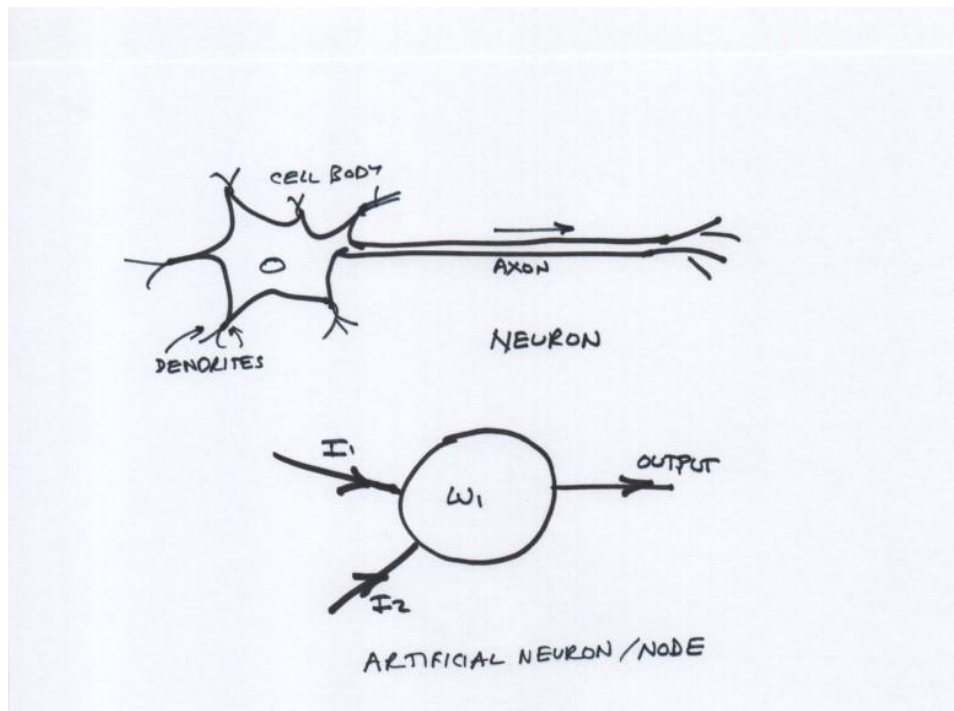
INTRODUCTION

Artificial Intelligence has become the primary buzzword of the current scene. While “narrow AI” (artificial intelligence used for a specific task, such as use in a search engine) is present in hundreds of applications, “strong AI” or AGI (Artificial General Intelligence) doesn’t yet exist. AGI would be able to accomplish any intellectual task that a human could perform. Many believe that strong AI would actually exhibit consciousness. Some labs are actively pursuing development of AGI, while others warn against it as an “existential risk.” [1]

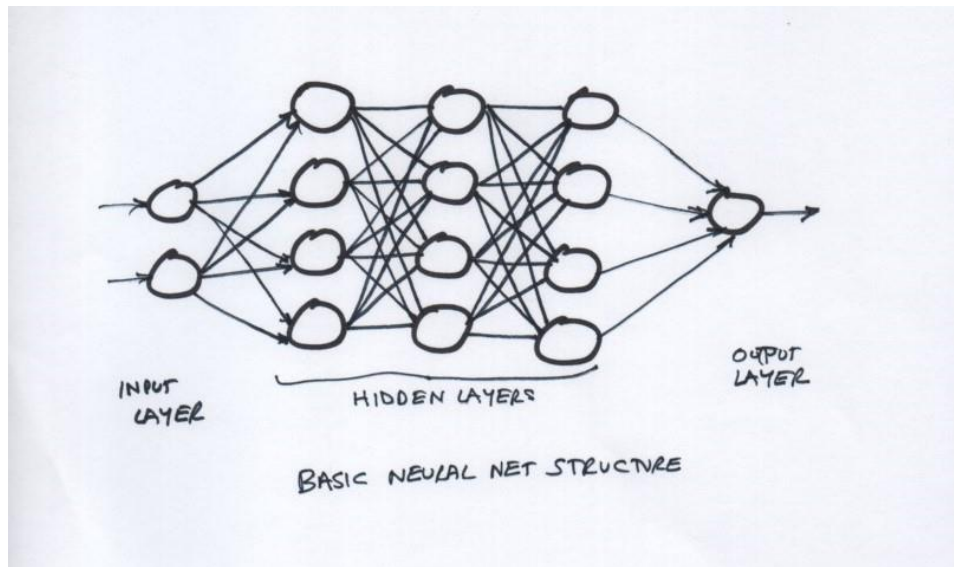
ARTIFICIAL INTELLIGENCE

How AI Works

Modern artificial intelligence is primarily based on advanced neural networks. An artificial neural network (ANN) is modeled on the neuron cells of the human nervous system. If total input voltage after a synapse exceeds a given threshold, a waveform (action potential) travels the length of the neuron.



Neural networks are a type of artificial intelligence (AI) that is inspired by the way the human brain works. They consist of interconnected layers of artificial “neurons” that are designed to process and analyze data. Neural networks are able to learn and adapt over time and are capable of solving complex problems and making decisions based on the data they are given. [2]



Neural nets make use of thousands or millions of weighted and interconnected nodes. In the neural net a series of nodes receive weighted input signals and generate output signals based on a given rule. Training involves feeding the net with a large dataset of inputs while connection weightings are adjusted to yield optimum output(s). Additional enhancements include central “hidden” layers, feedforward connections, mathematical convolution, and output probabilities. AI has been successfully employed for recognizing faces, patterns in medical data, and words and structures for language translation.

Utilization of AI

Artificial intelligence is already being used regularly in cameras, HVAC controls, and search engines. In the future, AI may prove most beneficial in manufacturing automation, language translation, and medical applications. AI can integrate hundreds of observations and search thousands of references to assist in medical diagnosis. AI has been successfully used in modern prosthetics control: Electrodes are inserted directly into the patient’s remaining muscle and EMG signals are optimally processed for control of the limb.

Concerns

Social media algorithms

Mark Legg notes these AI applications with social media: [3]

Amazon predicts what purchases their shoppers will want, personalizing the home page to incentivize buying.

Netflix predicts what shows will keep its users on their site. The AI can also choose a still shot from a movie to show as the cover seen on the homepage and changes it to renew interest in its users. This is why Netflix’s homepage appears differently for different people.

Gmail and Google Docs will often predict the next word a writer will type (and is, in fact, doing so as I write this article).

Facebook identifies people's faces and interprets the content of posts to target advertisements based on conversations.

Google uses AI for translation. The AI learns and improves over time so that Google Translate will improve year over year.

YouTube uses AI to flag videos, recommend the next videos, and, again, target ads.

Spotify uses machine learning to customize each listener's experience.

Tomas Chamorro-Premuzik, in *I, Human*, examines the ways in which AI has the capacity to reshape how we live, primarily through the algorithms built into social media: [4]

1. AI increases our distraction
2. AI diminishes our patience
3. AI increases our ignorance and prejudice
4. AI increases our self-centeredness
5. AI enhances predictability and general dullness
6. AI diminishes curiosity

“At least for now, AI's influence is not so much a function of either emulating or surpassing human intelligence, but shaping the way we think, learn, and make decisions.” In the limit, AI might make us less human. [5]

Loss of jobs to AI

Several occupations involving writing and question/answer interactions may be lost to software in the future:

- Clerical work
- Purchasing and inventory
- Research assistance
- Legal assistance
- Medical assistance
- Journalism

On the other hand, hands-on work with critical decisions is not likely to be replaced:

- Nurses
- Firefighters
- Police officers
- Electricians
- Plumbers

Issues

In 2018 the Pew Research Center surveyed dozens of experts regarding AI and the future. [6]

A clear majority of the responses from these experts contained material outlining certain challenges, fears or concerns about the AI-infused future. The five most-often mentioned concerns were: 1) the use of AI reduces individuals' control over their lives; 2) surveillance and data systems designed primarily for efficiency, profit and control are inherently dangerous; 3) displacement of human jobs by AI will widen economic and digital divides, possibly leading to social upheaval; 4) individuals' cognitive, social and survival skills will be diminished as they become dependent on AI; and 5) citizens will face increased vulnerabilities, such as exposure to cybercrime and cyberwarfare that spin out of control and the possibility that essential organizations are endangered by weaponized information. A few also worried about the wholesale destruction of humanity.

Experts describe three ways that AI may prove destructive:

- Faulty design of AI
- AI used for evil purposes
- AI grows in power and turns on us

Dr. Stuart Russell, a pioneer in AI research, has warned of the “misalignment problem.” [7] A well-designed AI system will perform the requested task with no understanding of what the requester really intended. AI has no external context, no conscience, no ethics, no feelings, no Golden Rule. A human being is simply an object, a detected point, or a mouse-click. If you couple AI to a machine and give it a goal, it will generate a way to accomplish that goal no matter what obstacle it encounters. “Get me coffee” could entail stealing it from Starbucks or mowing down anyone standing in front of a Keurig. In the extreme, a command to “make paper clips” could result in all the resources of the earth being turned into paper clips. The program contains millions of interconnected nodes whose weighting changes with each run-through. We no longer know what every line of code is doing. [8]

I, personally, would not trust AI to

- Decide legal cases
- Produce legislation
- Make decisions about going to war
- Totally pilot planes or spacecraft (without the possibility of a human override)

In the recorded cases of “cyber kidnapping,” AI has been specifically used for evil. A message is received, with a voice identical to that which a friend or relative would produce, describing details of a threat or kidnapping. The victim is similarly threatened online in a very believable manner. Instructions are given for payment demands.

Deepfake items involve the use of AI to generate false, but realistic, photos, videos, and audio recordings. Most are hoaxes, but some are sinister.

We can expect more deepfakes that harass, intimidate, demean, undermine and destabilize. But will deepfakes spark major international incidents? Here the situation is less clear. A deepfake of a world leader pressing the big red button should not cause Armageddon. Nor will deepfake satellite images of troops massing on a border cause much trouble: most nations have their own reliable security imaging systems.

There is still ample room for mischief-making, though. Last year, Tesla stock crashed when Elon Musk smoked a joint on a live web show. In December, Donald Trump flew home early from a Nato meeting when genuine footage emerged of other world leaders apparently mocking him. Will plausible deepfakes shift stock prices, influence voters and provoke religious tension? It seems a safe bet...

The more insidious impact of deepfakes, along with other synthetic media and fake news, is to create a zero-trust society, where people cannot, or no longer bother to, distinguish truth from falsehood. And when trust is eroded, it is easier to raise doubts about specific events.

Last year, Cameroon's minister of communication dismissed as fake news a video that Amnesty International believes shows Cameroonians the country's soldiers executing civilians. [9]

Will AI become a conscious threat?

Powerful AI will continue to develop, but conscious autonomous AI is a different animal altogether. I don't expect to see conscious AI, regardless of the level of sophistication of software...

- Consciousness requires awareness of oneself.
- Consciousness requires an embodied mind.
- Consciousness is tied to curiosity and creativity.
- The computer, no matter how sophisticated, is still simply a symbol manipulator and calculator. It doesn't really understand at a deep level what everything means. (John Searle's Chinese room thought experiment).
- AI responds to human prompts and does not take the initiative to try new things.
- AI is only as good as its training set. "Bias" problems have arisen in many face-recognition systems because the training data was limited to certain races.
- Meaning cannot arise in something that has no intrinsic meaningfulness.
- Humans have true emotions, awareness, and moral sense/conscience.
- AI is limited in what it learns. It has no inherent curiosity.

Humans can do things computers can't do:

- Humans can distinguish between what's relevant and irrelevant. Without programmed weighting, everything has the same importance to a computer.

- Humans exhibit “fringe consciousness.” [10] (ref- Herbert Dreyfus-consciousness series) We are aware of things in the background to which we can shift our attention, if desired.
- Humans can recognize and ignore irrelevant and ambiguous words.
- Humans can create categories of things- on the fly. Computers do not.

Other concerns

Surveillance

Between an increased number of surveillance cameras and the use of AI-powered facial recognition systems coupled to a huge database on its citizens, a nation can easily move from protecting its citizens to spying on and controlling its citizens. The situation in China should be a lesson to the world.

ChatGPT

ChatGPT (Generative Pre-Trained Transformer, from Open AI) is an application that mimics human research in producing a complete text in response to a prompt or query. Chat GPT can produce an output (story, play, poem, report) that so closely resembles what a human might write that it’s almost impossible to tell the difference. It will revolutionize many jobs and change the game in parts of education.

Derek Schuurman notes-

(C)omputer scientists will need the help of philosophers, theologians, social scientists, and others in the humanities to help direct technologies like AI-generated text in normative ways (in fact, a liberal arts context is an ideal setting for such collaboration).

Fred Brooks, a respected Christian computer scientist, wrote, “It is time to recognize that the original goals of AI were not merely extremely difficult, they were goals that, although glamorous and motivating, sent the discipline off in the wrong direction.” Brooks advocates for IA (Intelligence Amplifying) systems over AI, suggesting people and machines will be able to do far more than AI alone. As an example, one of my colleagues at Calvin University has been exploring the use of AI for helping people write better (as opposed to writing for them). [11]

Jeremy Caplan suggests these guidelines for working ethically with software like Chat GPT in the classroom: [12]

1. Confirm with instructors that use of AI tools is acceptable.
2. Ideate independently: generate your own outline and wording first.
3. Attribute authentically: Cite and credit properly all ideas, wording, and images generated by AI software.
4. Verify vigorously. Some generated material is not valid.
5. Respect privacy: Realize that whatever you submit to an AI engine could be used by others or could be used to train an algorithm.
6. Assess skeptically. Understand the biases and limitations of AI engines.

AI Girlfriends

Liberty Vittert has examined the problem of “AI girlfriends”: AI chatbot systems that learn, from data, what a man thinks about and likes and responds accordingly. They listen, respond, and talk in a way that makes them a “perfect companion,” and they are capturing a generation of young men who relate primarily via screens.

These young men are lonely, and it is having real consequences. They are choosing AI girlfriends over real women, meaning they don't have relationships with real women, don't marry them and then don't raise babies with them. America desperately needs people to have more babies, but all the signs are pointing toward fewer relationships, fewer marriages and fewer babies. [13]

AI and War

The use of AI in warfare has been troubling to many:

(A)s astonishing as machine-learning algorithms may be, they can be inherently inscrutable and unpredictable. During my visit to Shield AI, I have a brief encounter with one of the company's Nova 2 drones. It rises from the office floor and hovers about a foot from my face. “It's checking you out,” an engineer says. A moment later, the drone buzzes upward and zips through a mocked-up window on one side of the room. The experience is unsettling. In an instant, this little airborne intelligence made a determination about me. But how? Although the answer may be accessible to Shield AI's engineers, who can replay and analyze elements of the robot's decisionmaking, the company is still working to make this information available to “non-expert users.”

One need only look to the civilian world to see how this technology can go awry—face-recognition systems that display racial and gender biases, self-driving cars that slam into objects they were never trained to see. Even with careful engineering, a military system that incorporates AI could make similar mistakes. An algorithm trained to recognize enemy trucks might be confused by a civilian vehicle. A missile defense system designed to react to incoming threats may not be able to fully “explain” why it misfired.

These risks raise new ethical questions, akin to those introduced by accidents involving self-driving cars. If an autonomous military system makes a deadly mistake, who is responsible? Is it the commander in charge of the operation, the officer overseeing the system, the computer engineer who built the algorithms and networked the hive mind, the broker who supplied the training data? [14]

AI Church?

In *The Religion of Technology* David Noble explored the religious/humanistic root of artificial intelligence:

David F. Noble...claims that the attempts to design AI have religious roots. The idea of reducing the human thought process to quantitative aspects led to the idea of the mind being mechanical and replicable. Noble believes that the origin of this change was set within a religious background, stating that "In Cartesian terms, the development of a thinking machine was aimed at rescuing the immortal mind from its mortal prison. It entailed the deliberate delineation and distillation of the processes of human thought for transfer to a more secure mechanical medium – a machine that would provide a more appropriately immortal mooring for the immortal mind. This new machine-based mind would lend to human thought permanent existence, not just in heaven but on earth as well." [15]

Robert Marks notes that engineer Anthony Lewandowski has founded an AI Church (Way of the Future). "The AI church believes in the realization, acceptance, and worship of a Godhead based on Artificial Intelligence developed through computer hardware and software." [16]

Lewandoski states:

"In the future, if something is much, much smarter, there's going to be a transition as to who is actually in charge. What we want is the peaceful, serene transition of control of the planet from humans to whatever. And to ensure that the 'whatever' knows who helped it get along."

With the internet as its nervous system, the world's connected cell phones and sensors as its sense organs, and data centers as its brain, the 'whatever' will hear everything, see everything, and be everywhere at all times. The only rational word to describe that 'whatever', thinks Levandowski, is 'god'—and the only way to influence a deity is through prayer and worship. [17]

Marks notes that the promises of AI are typically those of Ray Kurzweil and that a "superintelligence" already exists: God our Creator. [18]

AI and missions

Mark Tabadillo notes that AI might assist world missions efforts in numerous positive ways:

First, AI can greatly enhance their communication and outreach efforts. Tools powered by Natural Language Processing (NLP), an AI technique, can translate sermons or religious texts into countless languages and dialects, breaking down barriers and fostering unity among diverse populations.

Second, Generative AI can create personalized spiritual content. It can tailor biblical study materials to individual learning styles, enhance engagement through interactive faith-based programs, and even produce creative religious storytelling to inspire and enlighten.

Third, AI-powered analytics can help leaders better understand their congregation's needs and concerns. By analyzing data like attendance, online engagement, and feedback, they can tailor their efforts more effectively, addressing the unique needs of their community.

Finally, AI can automate administrative tasks, allowing missionaries and leaders to focus more on their pastoral duties. It can manage scheduling, track donations, and handle basic inquiries, improving efficiency and organization. [19]

Alex Kocman adds-

(I) imagine not only giving ... seekers access to Scripture and to biblical articles and having to translate them. Imagine if you could automate all of the translation. Imagine if you could translate more easily into a number of dialects and sub dialects of Arabic or whatever language group you're working with for maximum distribution... Imagine that you could do the same and apply that to video content as well and captioning it. Imagine. Imagine you could then load that into a chat bot and give someone who maybe the spirit is at work in their life to draw them, give them the opportunity to in places where they don't yet have contact with a missionary, where they don't yet have contact with an unbeliever, with a believer to be able to query the text in plain natural language. .. They don't even know what types of things to ask yet they don't know the right questions to ask. Yet they might ask questions that are more informed by their Islamic sensibilities than Christian concerns. But for the chat bot to know and to be able to give them answers from Scripture, does it replace a missionary? No. Doesn't replace a church? No. [20]

Reducing Negative Impacts

Participants in the Pew Research project on the future generated various solutions to reduce negative AI impacts:

A number of participants ...offered solutions to the worrisome potential future spawned by AI. Among them: 1) improving collaboration across borders and stakeholder groups; 2) developing policies to assure that development of AI will be directed at augmenting humans and the common good; and 3) shifting the priorities of economic, political and education systems to empower individuals to stay ahead in the "race with the robots." [21]

Summarizing concerns about AI, Charles White wrote-

Back in 1968, Stanley Kubrick's film 2001: A Space Odyssey played on the fear that computers soon would become conscious, independent, and dangerous to humanity. In the story, the computer, called HAL, controls a spaceship with a human crew. When two crewmen decide to override HAL and retake control of the spacecraft, HAL murders one of them and attempts to kill the others. Three issues ago in this journal, James Hoskins reported that such a fear of

computers is not just the stuff of sci-fi nightmares but also is shared by Stephen Hawking, Elon Musk, and Bill Gates.

They need not worry...

Besides setting us free from the fear that computers like HAL will somehow come to consciousness and take over the world, the truths discovered by (Kurt) Gödel, (Alan) Turing, (John) Lucas, and (Roger) Penrose also have apologetic implications. If human minds cannot be reduced to computers made of silicon and steel, then they also cannot be reduced to computers made of protoplasm and protein. Our minds are more than our physical brains. Since there is more to the human mind than the material of the physical brain, something immaterial must exist in the universe. The existence of the immaterial, the metaphysical, opens the door to spiritual reality. Once it is clear that something other than the physical world exists, can God be far behind? [22]

ROBOTS

Background

Until recently robots were strictly large machines used in manufacturing plants. The current trends involve mobile robots, lifelike robots, and robots combined with computers and artificial intelligence.

Robots have several advantages over humans:

- Robots are extremely precise
- Robots can repeat processes exactly
- Robots can work for hours without a break
- Robots with the right sensors can work in the dark
- Robots can work in hazardous conditions
- Robots can work at a constant speed and rapid speed
- Robots can perform mind-numbing repetitive tasks
- Robots can handle greater weights than humans can
- Robots can interface with other assembly machines

Humans, on the other hand, excel at these things:

- Planning

- Creativity
- Critical thinking
- Decision making
- Problem solving
- Relating to others
- Collaboration
- Listening
- Self-adaptation

Kevin Kelly concludes that humans are efficient and adaptable, while robots are not. [23]

When (manufacturing and assembly) robots were strictly mounted on floors or tables, the “work envelope” that the robot arm could move through was carefully guarded, lest an onlooker got in the way of a moving end-effector. With mobile robots anyplace in a heavy robot’s path could potentially be dangerous.

Can robots be held accountable?

Nigel Crook suggests-

“My view is that robots would not be accountable and the analogy I give is that of a child. We have parental responsibility for our children and their behavior and we should have responsibility for robots. “We ought to be in control of the design of them and the development process all the way through. Just as it would be irresponsible to develop a rocket which could launch itself without controls, we need to develop safety mechanisms within robots. There will always be a way of pulling the plug on the machine.” [24]

Robot apocalypse?

For the same reasons that we don’t expect actual conscious AI, we don’t expect a robotic revolution. Can robots be a danger? Certainly, but not in an organized takeover of society.

Robot companions

Are we ready for robot companions? Alex Mar describes the work of Hiroshi Ishiguro who designs and builds lifelike humanoid robots/androids:

Ishi-guro believes that since we’re hardwired to interact with and place our faith in humans, the more humanlike we can make a robot appear, the more open we’ll be to sharing our lives with it. Toward this end, his teams are pioneering a young field of research called human-robot interaction...

I ...read Love and Sex With Robots, a 2007 book by AI expert David Levy. In it he proposes that we are not far from a time (he suggests roughly the year 2050) when humans will desire robots as friends, sexual partners, even spouses—a premise he seems unnervingly OK with. It all comes down to our willingness to believe in the robot’s emotional life and desires. Designed with the physical proportions that its human owner prefers, the preferred voice timbre and eye color and personality type, and the ability to recall and riff on its owner’s personal stories and little jokes, android will captivate human.

Levy takes Alan Turing's famous claim that the convincing appearance of intelligence (in AI) is proof of intelligence, and he expands that into the emotional realm: "If a robot behaves as though it has feelings, can we reasonably argue that it does not? If a robot's artificial emotions prompt it to say things such as 'I love you,' surely we should be willing to accept these statements at face value ... Why, if a robot that we know to be emotionally intelligent, says, 'I love you' or 'I want to make love to you,' should we doubt it?" Human emotions, he argues, are no less "programmed" than those of an intelligent machine: "We have hormones, we have neurons, and we are 'wired' in a way that creates our emotions." [25]

I worry about a time when people will seek out non-human companionship, particularly as screen technology moves us further and further away from human interactions.

Carl Trueman writes:

*Such is the technological and moral temper of our times that a serious report with the bizarre title *Our Sexual Future with Robots* might scarcely raise an eyebrow in a world where the scientifically possible is fast becoming the only judge of the ethical and where celibate friendship is now the only love that dare not speak its name...*

We live in a world where science is raising ethical questions faster than we are able to answer them. And, as far as sexual ethics goes, once sex is removed from its role as the seal of a lifelong monogamous commitment between a man and a woman, sexual ethics is doomed to descend into total chaos, built on the ever-shifting sands of cultural taste and selective and vague notions like 'consent.' The trap in which we now find ourselves was sprung long, long ago. And, as usual, the response is not to acknowledge that we have built our sexual ethic on nonsense but to try to make technology solve the problems which it has itself first created. [26]

Rodney Brooks, an AI researcher, has considered the problem of robot imitation. When we reach the point where AI-driven robots can learn actions by observing and copying human actions we still face a difficulty. If a robot observes a human opening a glass jar, rubbing his hands together, twisting the lid, and wiping his brow, the robot has no way of differentiating the essential actions from the nonessential. Humans can distinguish and discuss true goals and intentions. [27]

Robots sharing the Gospel?

Some have suggested that thousands of public evangelists could be released in a few months by developing robots programmed to "preach" a Gospel message. Such an approach misses God's plan. It is both the message and the messenger that matter in evangelism. Sharing the Gospel is a human endeavor, empowered by God's Spirit. No machine can represent the saving power of Christ.

Can robots be saved?

No-They have no soul, no free choice. They can repeat words, but without human understanding

There is an alternative to the dangers of creating in our own broken image. Designing creatures and caring for them requires more than just setting ethical parameters. We can take this cue from Scripture, where standards for living are an important but secondary part of what it means to be human. What makes us human is the divine design itself.

Think of it like this: When God designed people, he didn't ask the question, "How can we make people to make our life better?" or "How can we make people to serve us?" He could have done that and been just in doing so—but instead, he chose to make people in his own image, with the ability to relate and love, not just receive commands. If we want to follow God's creative example, perhaps we, too, should aim to fashion things with the ability to relate and love, and not just to receive commands. [28]

Conclusions

Stephen Hawking said in 2015 that “the real risk in AI isn't malice but competence, A super-intelligent AI will be extremely good at accomplishing its goals, and if those goals aren't aligned with ours, we're in trouble.” [29]

Oxford mathematician John Lennox explores the future of AI from a Biblical perspective in his book 2084. [30] He looks at the issues of work, privacy, and warfare. “The big question to be faced,” he writes, “is: How can an ethical dimension be built into an algorithm that is itself devoid of heart, soul, and mind?” [31] Beyond the common uses, he projects that some will attempt to use AI to accomplish the goals of transhumanism. Max Tegmark thinks that AI may be the greatest thing that's happened to humanity. Such an approach, says Lennox, may lead to the incredible deception and world-wide control that we see in Revelation 13:

I'm not one of these speculators that know exactly what it means. But I am interested in what it stands for. And you've got something that appears to give breath to another creature, to an image, actually, which is presumably a material thing. And it's so effective that it causes the whole Earth to worship it, which is a fascinating concept.

Then are we here? And that's a question. Is it a partial realization of AGI? We just don't know. But we do know, looking back in history, that at every stage human beings have set up images and bowed down to worship them. And what technology will produce one day is probably beyond our wildest dreams. For that reason, I want to take this scenario as seriously, indeed much more seriously than Tegmark's scenario. [32]

The advances we have seen in AI and robotics have led author Robert Geraci to critique what he terms “Apocalyptic AI,” the notion that technology, uploaded minds, and cyberspace will lead to a condition of human paradise, where we “fully realize our potential.” [33]

Russell Bjork writes:

As is true throughout the sciences, work in artificial intelligence 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 artificial intelligence, nor would successes in this field undermine human value or the doctrine of the image of God. This having been said, a realistic assessment of what has been accomplished to date suggests avoiding grandiose projections of what will be achieved in the

near future (a temptation to which workers in this field have often yielded). We need to approach this area with an attitude of great caution and even reverence, for, as Scripture says, we are “fearfully and wonderfully made” (Ps. 139:14). [34]

According to Jaki (1969) “...man, precisely because of his mind, is not a machine, but a marvel and out be treated as such”. To say that a robot is a person reduces humanity to the level of a machine. Robots can be intelligent, dexterous and autonomous, but they are not human, and will not replace humans... AI which in fact is the result of human creative product, may be seen as an extension of the human mind, to be used as tools that could perform activities that do not need creative abilities. The human system, not mentioning the brain, is too complex for anyone to comprehend or compare to a wired up machine. “And God created man in his own image, in the image of God he created him; male and female he created them. And blessed them...” (Gen 1:27-28a) [35]

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