

Self-Awareness, a Singularity of AI

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Self-awareness, or self-consciousness, refers to reflective recognition of the existence of “subjective-self”. Every person has a subjective-self from which the person observes and interacts with the world. In this article, we argue that self-consciousness is an enigmatic phenomenon unique in human intelligence. Unlike many other intelligent and conscious capabilities, self-consciousness is not possible to be achieved in electronic computers and robots. Self-consciousness is an odd-point of human intelligence and a singularity of artificial intelligence (AI). Man-made intelligence through software is not capable of self-consciousness; therefore, robots will never become a newly created species. Because of the lack of self-awareness, AI software, such as Watson, Alpha-zero, ChatGPT, and PaLM, will remain a tool of humans and will not dominate the human society no matter how smart it is. This singularity of AI makes us re-think humbly what the future AI is like, what kind of robots we are going to deal with, and the blessing and threat of AI on humanity.

Keywords: Self-consciousness, Subjective-self, Singularity, AI, Robot, Machine Intelligence

Introduction

The era of artificial intelligence (AI) looms large with the progresses of computer technology. Computer intelligence is catching up with, or surpassing, humans in intellectual capabilities. Sovereign of machine intelligence looks imminent and unavoidable.

Computer’s intelligence has surprised people a couple of times in the past 70 years. In 1940s, computers outperformed humans in numerical computations. In 1970s, computers showed their word/text processing ability. Then, Deep-Blue, Alpha-go, and Alpha-zero beat best chess players in succession. Recent AI chatbots ChatGPT and DaLL-E have stunned people with their competence in chatting, writing, knowledge integrating, and painting. Computer capabilities have repeatedly broken people’s expectations of machine capabilities.

Progress of computer’s intelligence goes with computer’s speed. As computing speed increases, a computer is able to handle larger amount of data and knowledge, evaluate more options, make better decisions, and learn better from its own experience. Better computers enhance and extend the capability of the research for making even better computers, which will accelerate the improvement of machine intelligence. Few doubt that computers will be sentient, conscious, spiritual, self-motivated to learn by itself, and capable of duplicating itself. Many take it for grant that AI is unlimited, and intelligent machine will become a self-sufficient and self-propagable species.

The future of computer intelligence had been debated for more than 60 years since “artificial intelligence” was coined as the title of the new field of computer science in 1956. At the center of the contention, it is the

issue about whether the computer can possess all the intellectual capabilities of a human, in terms of intelligence, consciousness, sentiment, mind, and spirit. Dualists have insisted that computer can never be spiritual because computer is “fundamentally different from what compose our body” (Hawkins & Blakeslee, 2004, p. 5). Many scientists, on the other hand, believe that a digital robot can become a “humanoid” as smart and emotional as a human, because a human is nothing but a “meat machine” to the final analysis, and there is no logical obstacle to have an “electronic machine” mimicking a “meat machine” (Minsky, 1986; Gilder & Richards, 2002).

Another issue in the contention is about how consciousness is achieved in computer. A few ways have been put forward, such as direct programming, reverse engineering, and making system complicated enough so that the soul emerges automatically (Kurzweil, 1999; Searle, 1997; Hofstadter, 1999; Penrose, 1999).

The third issue in the contention is about whether machine intelligence is a blessing or a threat to human beings. Optimists insist that human beings will benefit from intelligent machines and live in a more enjoyable life (Kurzweil, 1999). Pessimists are afraid that intelligent machines will take toll on human beings eventually. Bill Joy, Stephen Hawking, and many scientists and philosophers warned the world about the cataclysmic fate of humanity caused by the super-intelligent machines. They called for restraining the research on AI (Joy, 2000; Hawking, 2014). Both optimists and pessimists share a same belief that future robots will be a new “life form” of higher level of intelligence than humans. Their difference lies on the consequence of having such a smart life form.

We in this article argue that computer intelligence is not unlimited. Self-awareness is a singularity unachievable by the computer. Robots will not become a new life form or a new species because of this singularity. A computer can never have the full range intelligence of a human, and will remain a tool of human beings. In Section 2, we reason that self-consciousness is unachievable in a computer, and therefore is a singularity of AI. Section 3 discusses implications of the singularity of AI, such as consciousnesses closely related to self-consciousness, freewill and moral of robots, immortality of humans, legal responsibility of intelligent machines, and the fate of humanity.

Subjective-Self Is a Singularity of AI

In this section, we argue that enigmatic subjective-self is a singularity of AI, which is beyond the reach computer programming. A machine can never be self-aware.

Characteristics of Singularity

A singularity in mathematics refers to an odd point or singular point at which ordinary attributes do not apply. For example, $x = 0$ is a singularity point of function $f(x) = 1 / x$ because $f(x)$ is continuous at every point except for $x = 0$; and $x = 1$ is a singularity point of function $f(x) = 2 + |x - 1|$ because $f(x)$ is differentiable at every value of x except for $x = 1$.

A singularity in the nature world refers to something which physics laws do not apply to. Examples include a black hole in universe, the “status” before Big Bang 14 billion years ago from which our universe emerged, and death for a person who dies. Singularity is an objective existence, unfathomable and explainable with our knowledge. What happens inside a black hole, for example, is beyond our touch. We can “speculate” from the outside with our knowledge that a black hole contains a huge mass in an infinitely small space, with infinite density and gravity, and with infinitely curved space-time to a one-dimensional point, where the laws of physics

as we know cease to operate. We cannot do any observation and research inside a black hole to verify the speculations, because anything, including light and electromagnetic wave, does not come out.

“Death” is a singularity of the process of life for a person who dies. “Death” is a reality everyone faces sooner or later. Death of one’s own and death of someone else are fundamentally different. No one knows exactly what happens after “his/her own death”. It is not researchable scientifically. What we can imagine are the eternal darkness and emptiness after death where logic and physical laws do not make sense. For a particular person, what “eternal darkness” and “eternal emptiness” are like and where they lead to are beyond logical imaginations. Death for the person who dies is a singularity of the life process of that person.

Characteristics of Subjective-Self

Every person has a subjective-self from which s/he observes and experiences the world. A person’s name and social security number are the person’s identity in the eyes of the others, therefore not her/his subjective-self. Awareness of subjective-self can be tested in a “mirror test”, which is to see whether a subject recognizes its own figure in a mirror. This test is for the low level of self-awareness, and a monkey may pass it. Self-awareness in this article refers to the higher level self-awareness. It is identified by so-called “test of knowing death”, which is to see whether the subject understands death in such a way that the world around the subject will be gone forever after death. Only human passes the test (Wang, 2019). A human realizes that after he dies, he and everything around him will disappear forever. No other animal on Earth passes the “test of knowing death”. Self-consciousness is the recognition of the existence of such a higher level subjective-self from the first-person’s standpoint.

Subjective-self has the following characteristics (Wang, 2016; 2019):

1. Subjective-self exists as an internal mental phenomenon. “I think therefore I am”. Self-awareness and self-consciousness are cognitions of the existence of subjective-self.
2. “Myself” is unique. That is, for a particular person, there is one and only one subjective-self in this world.
3. “My-self” is unique all time. That is, for a particular person, his subjective-self did not exist before his birth, and will not re-appear after his death.
4. Subjective-self and awareness of subjective-self cannot be copied.
5. Subjective-self defies scientific researches, because scientific researches are for the objective objects instead of subjective phenomena.

Subjective-Self Is an Unachievable Singularity of AI

A computer can be programmed to gain intellectual capabilities, such as numerical calculating, memorizing, logical reasoning, self-learning, decision making, visuality, audibility, language translating, speaking, and navigating. The idea of Turing Test (Turing, 1950) tells that intelligence level of a machine is determined by the performance of the machine, rather than the internal process. For example, we say a computer can do calculation “32 times 15” because it can tell 480 as the result correctly. We do not care how the computer does the calculation internally. Similarly, a computer is deemed intelligent if it beats a chess world master, even it “thinks” in the way different from the chess master. A computer achieves human capabilities in an electronic way without emulating human’s biochemical mechanism, as an airplane achieves the capability of “flying” without mimicking birds. Based on this idea, we say a computer is “conscious” if it looks having feelings, without caring about the electronical process inside the computer.

A computer is programmed to look to be conscious. Some robots have already been claimed to look “conscious”. A robot-mop recharges itself automatically when its battery is low. It looks that the robot-mop has the consciousness of “hunger” which is the internal signal for energy replenishment. The robot-mop catches the signal of “hunger” and goes for recharging, just like a human feels hungry and finds food to eat. Many other consciousnesses can be similarly realized in a computer by emulating.

Despite that many human consciousnesses can be “emulated” or “mimicked” through programming, one piece of consciousness cannot be programmed. It is self-consciousness.

To prove subjective-self cannot be programmed, two “axioms” are used. The first is: subjective-self is unitary. The second axiom is: Any executable computer program can be converted to equivalent 0-1 codes on the tape of Turing Machine. The first axiom implies that subjective-self is not copiable. The second axiom implies that a computer program is copiable since the tape of Turing Machine is copiable obviously. Therefore, copiable computer programs cannot be used to code uncopiable subjective-self (Wang, 2016).

The above proving is tenable as far as the two axioms hold. The first axiom “any subjective-self is unitary” is a consensus: “There is only one ‘I’ in this world”. Its trueness is obvious to everyone. The second axiom is Church-Turing Thesis (Turing, 1950), which has been accepted in the computer field although it is not strictly proved. The conclusion that “subjective-self cannot be programmed” therefore stands on a solid ground.

A robot can be programmed to declare, “I’m self-aware!” or “I understand that I’m unique in this world”. But saying “I’m self-aware” does not mean the robot has achieved self-awareness. Such a declaration just shows that the robot is programmed to lie, since the robot can never be self-aware. This fake self-consciousness is different from a robot-mop being programmed to “feel hungry” and charge itself automatically. The signal of “hungry”, battery-low, is genuine in a robot-mop when battery drops to the preset level. While claiming “I’m self-aware” is claiming a non-existent thing, since subjective-self does not exist with a robot at all.

Stephen Wolfram hypothesized that all phenomena in this world are programmable, “Beneath all the complex phenomena we see in physics there lies simple program which, if run for long enough, would reproduce our universe in every detail” (Wolfram, 2002, p.35). His hypothesis was advocated by James Gardner, “Wolfram’s software of everything would be the mother of all source codes, generating not only the movements of stars and planets but also the emergence and evolution of life and intelligence” (Gardner, 2007, p. 12). This “software of everything” thesis is the base of “strong AI”.

Subjective-self and self-consciousness do not belong to Wolfram’s “everything”. Everything can be duplicated without causing logical contradiction, except for subjective-self. It is logically fine to program intelligence and consciousness such as computation, reasoning, learning, artistic creativity, sentience, and consciousness. But programming subjective-self would be logically prohibited. Subjective-self is therefore an odd-point in intelligence/consciousness. No matter how smart an intelligent machine is, subjective-self is a “forbidden blind-spot” which cannot be realized in a computer. Subjective-self is an unreachable singularity of AI.

Implications of the Singularity of AI

In the last section, we reasoned that self-awareness, as a singularity of AI, is a blind-spot of machine intelligence, which can never be achieved or realized in a computer. We next look at what it implies by this singularity, what the future perspective of machine intelligence is like with the absence of subjective-self, and how it will affect the humanity.

Self-Conscious Emotion (SCE), and Robot’s Soul and Spirit

Some consciousnesses of human are related to and dependent on self-awareness. They are called Self-Conscious Emotions (SCE) (Tracy & Robins, 2004). Here are examples of SCE:

understanding death and fear of death	curiosity	aggressiveness
inspiration of exploring the unknown	regret	glory,
self-respect	reverence	embarrassment
self-restraining	shyness	faith
sense of expectation/frustration	greed	envy
sense of morality	pride	guilt
sense of solemn	conscience	shame
sense of dignity	sense of nobleness	empathy
keeping up with the Joneses	impulse to dominate	determination

Some SCEs are more closely related to subjective-self than the others. Wang categorized SCEs into two groups, strong SCEs and weak SCEs (Wang, 2018). Some animals may have, arguably, some weak SCEs such as aggressiveness and jealousy. But no animals have strong SCEs, such as regret, self-respect, dignity, sense of nobleness and solemn, sense of morality, and inspiration of exploring the unknown.

Since self-awareness cannot be programmed in a computer, SCEs, especially strong-SCEs, cannot be programmed either. Robots with no self-awareness would not understand death, and will have no sense of glory, reverence, faith, conscience, shyness, and empathy. They will never have full range of human intelligence and consciousness. Robots will never be “humans” like we are.

A soul contains mindful elements such as dignity, self-respect, self-restraining, dignity, conscience, glory, shame, reverence, and sense of nobleness and solemn, which are all closely related to self-awareness. Without these SCEs, a robot will be just a machine with no soul.

A robot may pretend to have SCEs, but it will never genuinely possess them. An individual robot pretending to “fear death” would behave differently from a person who fears death deeply in the heart. “Bravery” will not make sense to a robot because it is not fearful of the dangers to its “life”. A robot will be inherently apathetic although they may pretend to be empathetic. A robot cannot be spiritual due to the singularity of AI, although it may be programmed to “look” spiritual. A robot will not have genuine initiative to pursue the meaning of life as humans have done for thousands of years. Religion does not belong to robots.

SCE is a portion of human consciousness. Many consciousnesses are not based on subjective-self, known as non-SCEs, such as pain, hunger, thirst, fatigue, dread, sexual desire, tasting sweet or spicy, and sensation of pleasure. While SCEs exist exclusively in humans who can reflectively cognize their being in the world, non-SCEs are found in both animals and humans. Since non-SCEs are not dependent on subjective-self, nothing prevents a robot from possessing non-SCEs through programming. It is not impossible for a robot to “feel” hungry, pain, angry, happy, and even to “fall in love”. But it is logically impossible for a robot to possess self-awareness and the related SCEs.

Will Robots Become a New Species Dominating Humans

The robots in the future will be super-intelligent. They are not only millions of times faster than humans in calculating and reasoning, but also intellectual in making decisions, translating languages, understanding a book, driving a car, writing articles, drawing pictures, and learning by themselves. They will outsmart humans in many aspects. However, they will not outplay humans in the aspects that require strong-SCEs.

Many scholars are seriously concerned about the future of human beings. They are afraid that, in the era of AI, humanity's fate will be at the mercy of the smarter robots. Stephen Hawking, Elon Musk, Bill Joy, and hundreds of scientists addressed this deep concern in an open letter in 2015 (Hawking, 2015). Their worries are reasonable, considering that once robots became a species, then humans would be in big trouble. Between two species, the one less intelligent is destined to be controlled and dominated by the more intelligent. Think of the fate of pigs, tigers, and dogs in the current world dominated by humans. However, the singularity of AI implies that what they worry will not come true. They may rest assured. Robots without self-awareness and SCEs will not form a species and will not have internal driving force of dominating.

A necessary condition for something to become a "species" is its self-reproduction, which requires inherent initiative and capability to propagate itself. Cars and computers are not species even though there are hundreds of millions of them on Earth. That is because cars and computers do not have "internal desires" to reproduce themselves. Their reproduction relies on human's desire. Bees or elephants are a species. They have instinctive impulse and capability of self-reproduction. The future robots do not have self-awareness and SCEs. They do not fear to die and have no internal desire in self-reproduction. They will not form a species.

Moreover, robots do not have the SCE of "dominating" so that they will not cause a threat on human race. Animals do not have sense of subjective-self, and they do not have driving force of dominating and controlling other species on Earth. Lions attack individual preys when they are hungry. But they have no desire to dominate the species of their preys. Except for human beings, no animals have the inherent impulse of dominating other species and controlling the Earth. Neither do robots.

ChatGPT, the state-of-the-art language chatbot, signals a new stage of AI. It can write essays, articles, computer codes, and poems. ChatGPT has once again aroused people of the threats of AI: What would people do when computers could surpass us in writing and chatting, in addition to computing, playing chess, storing knowledge, learning, and processing data? We are not sure how smart ChatGPT would be. But we are sure, due to the singularity of AI, that ChatGPT is not a prototype of a new species of AI that will dominate human beings someday. No matter how capable and knowledgeable ChatGPT can be, it will never be self-aware. It will remain a tool of humans, as other AI software like Google Search, Watson, Alpha-go, and Alpha-zero.

Freewill and Moral of Robots

Freewill and sense of morality are two strong-SCEs which are closely related to self-awareness and self-consciousness. Liberty is about "freedom of self". Moral is about "restraint of self". Without self-consciousness, liberty and moral would make no sense. "Without liberty, a life is of no sense other than a tool" (John Locke). Spiritual pursuit of liberty and meaning of life is found exclusively in self-conscious humans. Thinking about the meaning of life requires awareness of subjective-self and capability of reflection. Humans have kept probing "who I am", "where I come from", "why I am here", "how I live", "what is the meaning of my life" for thousands of years. All these inquiries prerequisite awareness of subjective-self.

Future robots are not self-aware; therefore, they will have no freewill, no desire for liberty, and no sense of morality. There will be no religions among robots because they are not interested in pursuing the meaning of life and death. Democracy or authoritarianism does not make sense to horses, dogs, and fish, neither to robots, due to the absence of freewill. For the same token, robots by nature would not care about being "unfairly" treated.

Robot's moral can be "injected" externally by the human programmers. But no moral would come from the inside of robots initiatively. Robot's moral is dependent on its human manufacturer.

Does AI Lead to Immortality

Living forever has become a topic in serious journals and periodicals, along with the progresses of AI. Some believe that immortality is no longer a dream, which can be reached by reverse engineering, man-made chips and parts, and AI software.

Kurzweil proposed a wild way of immortality: Scan and copy a person's brain into a computer and rebuild it after the person's death, so as to make the person resurrect (Kurzweil, 2013). However, this method of "copying brain" will not work, because if it worked, then multiple resurrected lives could be rebuilt based on the copy of one person's brain, which would contradict the uniqueness of a person's subjective-self.

What if replacing human's body and brain part by part? We have already had artificial parts in our bodies, such as prosthetic arm/leg, denture, implanted breast, synthetic blood vessel and heart valve. Individuals with hearing impairment or visual disability have been helped by implanted semiconductor chips in the head to enhance aural and eyesight. At the time when every failing or faulty part of one's brain was replaced by an artificial one, a person would become immortal.

To see this method of "gradual-replacement" does not work for immortality, let us consider two processes. Process A is building a robot by "copying" a person P's brain. Process B is replacing person P's brain by chips one by one. In Process B, person P's brain starts with 0% artificial part, and ends up with 100% chips after his original brain is fully replaced by chips. The brains as the results of Process B and Process A are same in terms of outcome, which are the copy of the brain of person P. As we have reasoned above, the brain from Process A does not have P's subjective-self since subjective-self is not copiable. So, the brain built by Process B does not have person P's self-identity either. Although we do not know at what stage of Process B person P's subjective-self is lost, we are sure that at the end of Process B, P's subjective-self is not there. Wang hypothesized, subjective-self is something beyond our current knowledge, which looks to have a third mysterious constituent unknown for us like dark matters or something in the higher dimension (Wang, 2019). Anyway, simply copying or replacing physical parts of the brain cannot save a person from his/her own death, even though AI may extend the life. Immortality remains a dream.

Who Takes Responsibility for What a Robot Does

Let's take chatbot ChatGPT as an example of robots. Who takes responsibility for the remarks of defamation of ChatGPT?—The chatbot or its developer? Obviously, at this stage of ChatGPT, its developer must take responsibility.

But, what if ChatGPT "grows" up sometime in the future? The capability of ChatGPT comes mainly from its self-learning. What ChatGPT says is not told directly by its developer. Its developer just teaches it how to learn, instead of what to say. Parents are legally responsible for their child before the child becomes an adult. Take ChatGPT as a child of its developer. At the "early age" of ChatGPT, its developer takes responsibility. The growing process of ChatGPT is not fully under the control of its developer. Instead, it is dependent on its own experience and self-learning, just like a child's growing process. It seems that at certain point, ChatGPT should take full responsibility of its own speech, as when a child becomes an adult.

However, not any "adult" takes legal responsibility for its behavior. An adult dog does not take legal responsibility for its behavior. The owner of the dog does. That's because even an adult dog is a not self-aware. A self-aware human knows that "'I' do it therefore 'I' take the consequence of what 'I' do". A dog does not have such a sense of "I".

A human child does not take responsibility for what he does, because a child's self-consciousness is not fully developed, until he becomes an adult. In the case of ChatGPT, it should take responsibility for what it says when it possesses self-consciousness. However, as computer software, ChatGPT will never be self-aware! Therefore, ChatGPT will never take responsibility for what it says. Its developer does.

Is a Robot a Juridical Person

Is "killing a robot" a crime of murdering? Is letting robots do dirty and dangerous jobs "discrimination"? Does a robot have its "robot-rights"? The answers are "no". Robots are not self-conscious. They are tools without soul. Destroying a tool is not murdering. Taking robots as "slaves" is not enslaving and discrimination. A robot without self-awareness is not a human. It is treated a tool such as a calculator, a TV set, and a laptop computer.

Self-awareness is a prerequisite for the sense of justice which underlies a human society's moral and legal systems. Due to the singularity of AI, robots will not have the sense of moral and the desire for rule of law. Our juridical system will never be applicable to robots, despite they look like us and are more intelligent than us.

The Threat of AI Comes From the Humans Who Use AI

Digital robots are expected to be supersmart. Their intelligence level can be millions of times better than humans in computation, logical reasoning, and decision making. They may look like humans in aspects of speaking, seeing, hearing, walking, running, and facial expression. They can be capable of anything we are capable of. But they are not self-aware. They have no SCEs. And they have no spirit and soul. Without spirit and soul, a robot will remain a tool of human beings. It has no initiative to "explore the unknowns" and "dominate the world". Such a tool by nature inherently has no threat to the humanity.

But it does not mean a tool will have no threat to us at all. The safety of a tool is dependent on who makes the tool and who uses the tool. Supersmart robot is a tool of humans, which can be used constructively or destructively. People wishfully intend to restrain the research for destructive applications. But if some "bad guys" designed and manufactured harmful robots, then good guys must react to do the "counter-research" even it is against their kind wills. That is the "law of following-the-evil", as it is called. Validity of "law of following-the-evil" is showed in developments of nuclear power, cloning technology, and stem-cell research, in addition to AI robots.

Robots without self-consciousness will remain a tool of humans. Its usefulness or harmfulness is up to the designers and users of the tool. How much robots will be threatening human beings is not determined by the robots, but by the humans who make and control the robots.

Kurzweil's Singularity Is Not a Singularity

Futurist Ray Kurzweil predicted that the "technological singularity" was near (Kurzweil, 2005). His "singularity" referred to the uncontrollable machine intelligence which surpassed human beings thousands of times and became the most capable life form on Earth. By that time, machines think and learn so quickly that biological humans cannot follow and comprehend. Moreover, intelligent machines can improve themselves without human's help. Enhancing machine intelligence will thus form a self-reinforced loop of positive-feedback by which robots make smarter robots by themselves, causing an "explosion of intelligence". The self-reinforced explosion will necessarily lead to exponentially improved computer intelligence that will soon dominate the earth and whole universe. That's Kurzweil's singularity. He predicted that the singularity would happen as early as 2045.

Kurzweil's singularity stems from the fact of accelerated computing speed up to now. Since 1950's, computer speed has been doubled every two years, which almost matches what Moore's Law predicted (Moore, 1965). Moore's law indicates an exponential increase of computing speed. Computer intelligence, proportional to computing speed, has thus improved with the similar rate in the past years. Kurzweil believes the exponential improvement will continue for a long time. After Moore's Law stops due to the limit of number of atoms on a chip, there will be other forms of computing to pick up the rate.

Kurzweil's singularity assumes that computer will be intelligent enough so as to keep improving itself initiatively. This assumption is not true. Self-awareness is unachievable by computer intelligence, as we have reasoned. Without self-awareness, computer would have no SCEs and no the internal drive for improving itself and exploring the unknowns. Human beings with self-consciousness would remain the initiators of any new research projects for the improvement of machine intelligence. How far and how fast machine intelligence will go are ultimately dependent on humans who are imperfect and of limited intelligence. Computer intelligence will not "fly off the handle" to conquer the universe. Kurzweil's "singularity" is an unrealistic illusion. It is not a singularity at all.

Final Remarks

Robots will never achieve the full range of human intelligence because they do not have human's self-awareness and SCEs. What AI will achieve is just a highly intelligent tool, instead of a self-sufficient species. We are not making a new species of AI on top of the varieties of species already created by the supernature or God. Trying to play God to make a new species of AI is a bold but unrealistic dream.

Technology has been advanced with an explosive rate during the past two hundred years. Imaginations have turned to reality. Miracles have become routines. Stronger than any time in human history, we now regard ourselves as the juggernaut of the world, of the earth, and even of the universe. The singularity of AI warns us about the limit of our knowledge and capabilities. For those filled with fanatic zeal of dominating the world with man-made intelligence, the singularity of AI reminds them of the humble role of humans in the Nature.

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