
Evaluation of Challenges for Extensive Use of Artificial Intelligence (AI) in Every Aspect of Life

Khandakar Akhter Hossain

Department of Naval Architecture and Marine Engineering (NAME), Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

Email address:

kahossain756@gmail.com

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Abstract: Artificial Intelligence (AI) is a technology that models human intelligence. It allows computer programs to learn from experience through iterative processing and algorithmic training. AI systems is getting smarter with each successful round of data processing; because each interaction gives the system a chance to test and measure solutions and get better at the job, and it has designed to do such miracle. Today, AI become so useful and pertinent that, in aspect of life it is must, as they get smarter and smarter. However, AI has been a hot topic in the recent time, and many debates and conversations have centered on, and also raise the question is how it might affect the job market. Major and general people worry that, AI will cause a lot of people to lose their jobs; while some technology lover people think that, it will lead to create lots of new and interesting jobs. AI's rise has been both exciting and discouraging, and many experts think that, it will have a big impact on the workplace and all aspect of life in near future. However, most of the people are realizing that, AI has the ability to make jobs more creative, lucrative and flexible, which will lead to a more inventive and skilled economy. Again, the technologies of today are starting to take away more jobs than they make, and unfortunately this trend will continue. Nowadays, there have been many ideas for how to solve this problem, and they all have to do with schooling. But, there isn't enough work for everyone in the world, so the whole school system needs to be changed, to reorganize and to be more purposeful. It is an analytical study in which the researcher tried to evaluate the extensive use of AI in all aspect of life and the consequence as well as future challenges waiting for globe.

Keywords: AI, IoT, ML, VR, Algorithm, Networks, Robot, Singularity

1. Introduction

AI is the simulation of human intelligence by machines, especially by computers, to do tasks that usually require human intelligence, like seeing, hearing, making decisions, and translating between languages. Siri by Apple, Alexa by Amazon, Google Maps, and ChatGPT by OpenAI are all examples of AI that people use every day [1]. Since this can be done quickly; far quicker than a human could. Today, people are realized, AI-controlled self-driving cars [2] are the sign of fact that, the future is getting closer. The concept of a driverless car is no longer the stuff of science fiction. Recent 1717 studies say that by 2040, there will be about 33 million cars that can drive themselves. On the other hand, AI in healthcare is become popular term for the use of ML algorithms and software, or AI, to imitate human cognition in

the analysis, evaluation, calculation, presentation, and understanding of complex physical, medical, mental, and healthcare data, or to go beyond human capabilities by giving new ways to diagnose, choose drugs, treat, or prevent disease [3]. AI has the ability of computer programs to draw close conclusions based only on the data they are given. AI can examine connections between various types of clinical data and final patient outcome [4]. AI now affects almost every part of our lives, from choosing what books, goods, electronic household items, or flights to buy online to deciding if our job applications are accepted, if we get a bank loan, and even what care we get for cancer or other diseases. A lot of big tech companies, like Amazon, Facebook, and Microsoft, have opened new study labs for AI. It's not much of a stretch to say that software now means AI [5]. Peter Norvig, Google's director of research and a pioneer of ML

said, 'AI has shown that it can do a lot of useful things, like label photos, understand spoken and written natural language, and help find diseases. For example, today, 12Google Maps' usefulness to travelers is mostly due to AI. It has allowed us to create detailed road maps in a fraction of the time it took just five years ago, and to distribute these maps to every part of the globe. We may also rely on AI-powered apps to keep us safe and comfortable while we ride bikes, stroll, or take public transportation. Many in the financial sector see a bright future for AI, particularly in the banking industry. In the financial industry, it is the beginning of use AI technologies like, machine learning (ML), algorithmic trading (AT), adaptive intelligence, chatbots (CBs), and automation [6].

AI is revolutionizing modern life, but some experts are concerned that it will one day take over the world or threaten human jobs. Millions of people have expressed concern about prospective job losses after the launch of OpenAI's chatbot ChatGPT. However, one of the three 'Godfathers of AI' has recently downplayed fears that AI will take over the globe or result in irreversible job losses. According to the BBC, Professor YannLeCun, Meta's chief scientist, called experts' fears of AI being a threat to humanity 'preposterously ridiculous.' Mr. LeCun believes that computers will eventually become cleverer than humans; however, this could take years. His response to all of the concerns is that if somebody believes that AI is dangerous, they should just not construct it. LeCun's remarks contradict those of other AI 'Godfathers' such as Geoffrey Hinton and YoshuaBengio, who have termed AI a threat to humanity. According to Mr. LeCun, the entire concept of AI taking over the globe is a 'projection of human nature on machines.' In fact, he went on to say that 'keeping AI research 'under lock

and key' would be a 'huge mistake [7].' According to the Meta scientist, when people express concerns about future robots working at or beyond human-level capabilities, 'they are referring to artificial general intelligence (AGI) systems capable of handling a wide range of problems, similar to humans.' He emphasized that AGI development would be slow, with the goal of eventually achieving a level of intelligence similar to that of a rat's brain. LeCun also told the BBC that AI will not knock many people out of work permanently. However, work would alter because we have 'no notion' what the most remarkable jobs will be in next 20 years.

If AI technology becomes an increasingly important component of more products in the future, it will become a fundamental part of many people's life. The amount of effort AI puts into the economy is also likely to vary from region to region. This may depend more on the type of economic activity that is most common in a region than on the economic or development state of the region. AI technology has the potential to give benefits to different income chooses and to bring significant gains to both developed and developing countries [8]. AI has the potential to create new and innovative job opportunities, leading to a more productive and efficient economy [9]. Automating tasks can help companies do better by reducing mistakes, improving quality and speed. Some recent study has shown that automation could boost global productivity growth by 0.8% to 1.4% per year, which is equivalent to more than 2,000 work tasks in 800 occupations. When proven technologies can only automate less than 5% of all jobs, about 60% of all jobs have at least 30% of their tasks that could be done by a machine. There will be changes in several professions [10].

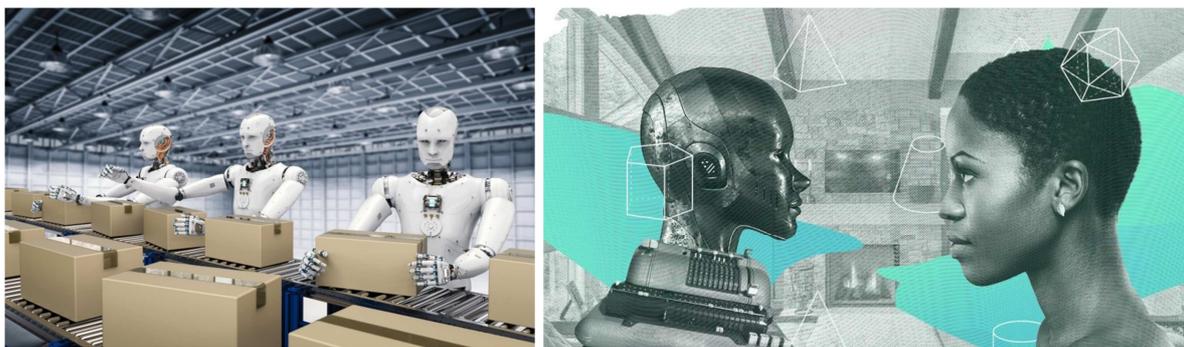


Figure 1. Robots working in industry [11] and digital revolution relate technology and human [12].

On the other hand technologies of today are beginning to eliminate more employment than they create. In reality, the world will become more complex and egotistical in the future, and there will not be enough jobs for everyone [13]. Advances in AI and related forms of automation technologies have led to growing fears about job losses and increasing inequality. This concern is widespread in high-income countries. Developing countries and emerging market economies should be even more concerned than high-income countries [14]. Extensive use of AI could also threaten the

progress made in reducing poverty and inequality in the society. It has been found that, after the three decades after World War II, living standards rose in the US economy and many other high-income and growing countries as a whole. But over the past 50 years, output growth and typical worker incomes have started to move in different directions. Again, economic theory warns that growth in technology is likely to make both winners and losers [15]. As long as the winners and losers from technological progress are located within the same country, there is at least the possibility that domestic

policy measures can compensate the losers. However, when technological progress deteriorates the terms of trade and thus undermines the comparative advantage of entire countries, then entire nations may be worse off except if the winners within one country compensate the losers in other countries, which seem politically very difficult [16]. In this investigative paper, I shall try to explore the benefit of AI in different sectors, relationship between AI and job creation, future worry of AI and some other contemporary issues. It is an analytical study in which the researcher tried to evaluate the extensive use of AI in all aspect of life and the consequence as well as future challenges waiting for globe. Researcher will also try to figure out what the future effects of AI will be for the whole world.

2. Basic and Background of AI

We know that, logic is used for knowledge representation and problem-solving. However, it can be applied to other problems as well [17]. Today, numbers of different forms of logic are using enormously in AI research. In case of propositional logic [18], it involves truth functions like, 'or' and 'not' [19]. On the other hand, first-order logic [20] adds quantifiers and predicates as well as it can express facts about objects, their properties, and their relations with each other. Whereas, Fuzzy logic assigns a 'degree of truth' (between 0 and 1) to hazy statements like, 'Alice is young' (or rich, or tall, or white, or hungry), that are too linguistically imprecise to be completely true or false [21]. Again, default logics, non-monotonic logics and circumscription are forms of such logic which designed to help with default reasoning and the prerequisite problem [22]. Numerous extensions of logic have been designed to handle specific domains of knowledge, like as description logics; situation calculus, event calculus and fluent calculus for representing events and time [23]; causal calculus [20]; belief calculus for belief revision; and modal logics [24]. Logics to model conflicting or inconsistent statements arising in multi-agent systems have also been designed, like Para-consistent logics [25].

Many problems in AI (which includes, reasoning, planning, learning, perception, and robotics) need the agent to function with inadequate or indefinite information. AI researchers have devised a number of tools to solve these problems; by using methods from probability theory and economics [26]. Bayesian networks are a very general tool and that can be used for numerous problems, which include reasoning (means, using the Bayesian inference algorithm), learning (means, using the expectation-maximization algorithm), planning (means, using decision networks) and perception (means, using dynamic Bayesian networks) [27]. Probabilistic algorithms can also be used for filtering, prediction, leveling and finding explanations for streams of data, and those helping perception systems to evaluate processes that occur over time. A key concept from the science of economics is 'utility', and that measure of how valuable something is to an intelligent agent. Precise mathematical tools have been developed that analyze how an

agent can make choices and plan by using decision theory, decision analysis and information value theory [28]. These tools have included models such as Markov decision processes, dynamic decision networks, game theory and mechanism design [29]. There are two basic kinds of AI applications: classifiers (like 'if shiny, then diamond') and controls (like 'if diamond, then pick up'). But controllers also group situations before figuring out what to do, which is why classification is a key part of many AI systems. Classifiers are functions that find the best match by matching patterns. They can be changed based on examples, which makes them a good choice for AI. These kinds of things are called observations or patterns [30]. In supervised learning, each pattern remains belongs to a certain predefined class. And a class is a decision that has to be made. All the observations combined with their class labels are known as a data set. When, a new observation has received, that observation needs to be classified based on previous experience. Neural networks were inspired by the architecture of neurons of the human brain [31]. A simple 'neuron' N accepts input from other neurons, each of which, when activated (or 'fired,' casts a weighted 'vote' for or against neuron N activation. Learning necessitates the use of an algorithm to alter these weights depending on training data; one basic algorithm, such as 'fire together, wire together,' increases the weight between two linked neurons when the activation of one causes the successful activation of another. Neurons, on the other hand, have a continuous spectrum of activation. Furthermore, rather than weighing simple votes, neurons can analyze inputs in a manner that is nonlinear.

To represent complicated interactions between inputs and outputs and to discover patterns in data, modern neural networks have become indispensable. Both discrete and continuous functions, as well as digital logical procedures, are within their ken. During training, a neural network creates a multi-dimensional topology, which can be thought of as a mathematical optimization problem [32]. The most common training technique is the back propagation algorithm. And other learning techniques for neural networks are Hebbian learning, competitive learning [18]. The main categories of networks are acyclic or feedforward neural networks; where the signal passes in only one direction and recurrent neural networks, and which allow feedback and short-term memories of previous input events [33]. Specialized languages for AI have been developed, such as Lisp, Prolog, Tensor Flow and many more. At the same time, hardware has also developed for AI includes AI accelerators and neuromorphic computing [34]. Again, graphics processing units (GPUs), often with AI-specific enhancements, had displaced central processing unit (CPUs) as the dominant means to train large-scale commercial cloud AI [35].

3. Versatile Applications of AI

As per the history of AI, in the first decades of the 21st century, highly mathematical and statistical ML has

dominated the field, and this technique has proved high success and helping to solve many challenging problems throughout industry and academia [38]. The traditional goals of AI research include reasoning, knowledge representation, planning, learning, natural language processing, perception, and the ability to move and manipulate objects [36]. General intelligence as the ability to solve an arbitrary problem and is among the field's long-term goals [37]. AI researchers have adapted and incorporated a wide range of problem solving techniques, like, search and mathematical optimization, formal logic, artificial neural networks, and methodologies based on statistics, probability, and economics, to solve these difficulties. AI also employs computer science, psychology, medicine, healthcare, linguistics, philosophy, and a variety of other disciplines [39]. AI applications include advanced web search engines (like Google Search), recommendation systems (used by YouTube, Amazon, and Netflix), understanding human speech (like, Sire and Alexa), self-driving cars (like, Waymo), generative or creative tools (like, ChatGPT and AI art), automated decision-making, and competing at the highest level in strategic game systems (like, chess and Go) [22]. In future AI affect, like optical character recognition is frequently omitted from things considered to be AI, having become a routine technology [38]. Today, there are also thousands of successful AI applications used to solve problems for specific industries or institutions. A few examples are energy storage [40], deepfakes [41], medical diagnosis, military logistics, foreign policy [42], or supply chain management. AI will have a greater impact on technology in the future, influencing every sector, machinery, equipment, and devices. It is an analytical paper that depicts the impact of AI on technologies, machinery, and devices in our daily lives, business, industry, and other sectors, as well as problems and recommendations for the best harvest in the twenty-first century. With a 99% accuracy rate, AI has been applied in facial recognition systems. Apple's FaceID and Android's Face Unlock are two examples. Both are employed in the protection of mobile devices. Google has utilized image labeling to detect products in photographs and to allow customers to search using a photo. Image labeling has also been shown to generate speech in order to describe visuals to blind persons [43].

On the other hand, AI is used to target web advertisements to those most likely to click or engage on them. It is also used to increase time spent on a website by selecting gorgeous content for the viewer. It can predict or simplify the behavior of customers from their digital footprints [44]. Online gambling companies, use AI to improve customer targeting [45]. Personality computing AI models add psychological targeting to more traditional social demographics or behavioral targeting [46]. AI has been used to customize shopping options and personalize offers [47]. Intelligent personal assistants use AI to understand many natural language requests in other ways than elementary commands. Few common examples may be: Apple's Sire, Amazon's Alexa, and a more recent AI, ChatGPT by OpenAI [48]. ML can be used to fight against spam, scams, and phishing. It can

scrutinize the contents of spam and phishing attacks to identify any malicious elements [49]. Numerous models built on ML algorithms exhibit excellent performance with accuracies over 90% in distinctive between spam and legitimate emails. AI has been used to automatically translate spoken language and written content [50]. Additionally, research and development is in progress to decode and conduct animal communication [51]. While no system provides the ideal of fully automatic high-quality machine translation of unrestricted text, many fully automated systems produce reasonable output [52]. The quality of machine translation is substantially improved if the domain is restricted and controlled [53].

In the 21st century, AIs have produced superhuman results in many games, including chess (DeepBlue), Jeopardy (Watson) [54], Go (AlphaGo) [55], poker (Pluribus and Cepheus) [56], E-sports (StarCraft) [57], as well as general game playing (AlphaZero and MuZero) [58]. AI has replaced hand-coded algorithms in most chess programs [59]. However, poker lacks the perfect information of go or chess. Therefore, a poker playing programme must be able to reason while facing unknowns. Players in the general population function based on information provided by the game system, rather than on the rules themselves. Institutions using AI to address global economic and social concerns are being supported by a new ITU effort called AI for Good. The University of Southern California, for instance, has established the Centre for AI in Society to apply AI to social issues like homelessness. Artificial intelligence is being used by Stanford University to analyze satellite photos in search of pockets of concentrated poverty [60]. In agriculture, AI has helped farmers identify areas that need irrigation, fertilization, pesticide treatments or increasing yield [61]. Today, agronomists use AI to conduct research and development. AI has also been used to predict the ripening time for crops such as tomatoes [62], monitor soil moisture, operate agricultural robots, conduct predictive analytics [63], classify livestock pig and cow call emotions, automate greenhouses [64], detect diseases and pests [65], save water [66], etc. In future AI will be used to completely automate most cyber security operations over time [67].

AI can create a dysfunctional situation with revenge effects [68], like technology that hinders students' ability to stay on task [69]. In another scenario, AI can provide early prediction of student success in a virtual learning environment (VLE) such as Moodle [70]. In the education process, students can personalize their training with the help of AI. And for teaching professionals, the technology provided by AI can improve the quality of the educational process and teaching skills [71]. AI is used to aid investment decisions at large financial firms. Aladdin, BlackRock's AI engine, is used by the firm and its customers alike to make better investing choices. SQREEM (Sequential Quantum Reduction and Extraction Model) is a data mining tool used by financial institutions like UBS and Deutsche Bank to create client profiles and better tailor wealth management offerings to individual clients [72]. Its functions include the

use of natural language processing to analyze text like, news, broker reports, and social media feeds. Banks use AI to organize operations, for book-keeping, investing in stocks, and managing properties. AI can react to changes when business is not taking place [73]. Today, AI is used to combat fraud and financial crimes by monitoring behavioral patterns for any abnormal changes or anomalies [74]. The use of AI in applications such as online trading and decision making has changed major economic theories [75]. For example, AI-based buying and selling platforms estimate individualized demand and supply curves and thus enable individualized pricing. AI machines reduce information asymmetry in the market and thus make markets more efficient [76]. Many banks, funds, and proprietary trading firms now have entire portfolios that are AI-managed. Automated trading systems are typically used by large institutional investors but include smaller firms trading with their own AI systems [77]. There is a large array of applications where AI is serving common people in their day-to-day lives. Common application of AI with example has been shown in table below.

Table 1. Common application of AI with example [78].

SI No	Common Application of AI System with Example
1	Expert Systems Examples: Flight-tracking systems, Clinical systems.
2	Natural Language Processing Examples: Google Now feature, speech recognition, Automatic voice output.
3	Neural Networks Examples: Pattern recognition systems such as face recognition, character recognition, handwriting recognition.
4	Robotics Examples: Industrial robots for moving, spraying, painting, precision checking, drilling, cleaning, coating, carving, etc.
5	Fuzzy Logic Systems Examples: Consumer electronics, automobiles, etc.

4. Impact of AI in the Era of 4IR

Now, AI has been around everywhere for a great deal of time. The benefit of AI is steadily improving our everyday life. The technology is being used for robots that welcome at shopping centers or online search engines for offering suggestions [79]. Today, AI simulates human analysis in AI systems. It is the ability of the computer program to think and learn. Everything can be taken to be AI, if it involves a program that does something and that we usually think

depends on human intelligence. Innovations in the AI space have led to several benefits across multiple industries [80]. Today, processes are effective and efficient, convenient technologies are extensively available, and forecasts are more accurate. AI and other technology experts are saying today, the rise of AI will make most people better off over the next decade, but many have concerns about how advances in AI will affect and what it means to be human, to be productive and to exercise free will. The automation revolution will have a tremendous impact on the fundamentals of business and society, as well as on the innovation and productivity potential. Blockchain technology has the potential to impact most industries across the globe in the near future [81]; heralding in a new age of consumer trust and optimization. AI can improve data backup and disaster recovery planning and policy from an IT standpoint to ensure smooth company continuity. The elements for successful technology and IT leadership continue to evolve, but the requirement for strong business strategy, vision, and IT management, as well as a knowledgeable approach to risk, compliance, outsourcing, and AI, remains as important as ever [82].

Digital existence is enhancing human potential while upending long-standing human activity. More than half of the world's population now uses code-driven systems, which present both extraordinary potential and challenges that have never been seen before [83]. Will people be better off than they are now as algorithm-driven AI continues to spread? AI will have an impact on the entire agricultural and food value chain, from farm to fork, both now and in the future. Next-generation automotive technologies will be influenced by AI, and this will change how cars, trucks, and powertrains are designed and produced [84]. AI will influence the tech developments of the global aviation and aerospace sectors. It will also influence space travel and communications, airport operations and management, air traffic control systems, and future trends in flight and aviation transport related industries. AI will influence the technology innovation transforming all parts of the construction and civil engineering sectors leading to improvements in cost, safety, efficiency and quality of construction [85]. AI will have an impact on smart phones, tablets, and wearable tech gadgets, as well as how people live, work, and consume services, prompting businesses to establish their own methods for dealing with such use at the back end and capitalizing on it at the front end [86].



Figure 2. Role of AI in education system [87] and revolution of future education system [88].

The experts predicted networked AI will amplify human effectiveness but also threaten human autonomy, agency and capabilities [89]. Computers might be as smart as or smarter than humans when it comes to things like making complicated decisions, learning, reasoning, pattern recognition, visual acuity, speech recognition, and language translation. Smart systems in neighborhoods, cars, buildings, utilities, farms, and business processes will save time, money, and lives and give people the chance to enjoy a more personalized future [90]. The use of AI in healthcare is hopeful, with applications such as diagnosing and treating patients and assisting senior citizens in living fuller and better lives. They were particularly enthused about AI's involvement in broad public-health programmes based on vast amounts of data that may be collected in the future years on everything from personal genomes to nutrition [91]. AI would abet long-anticipated changes in formal and informal education systems.

Looking around now, we can see that our society is changing as a result of the use of AI and IoT in daily operations. If we go to a healthcare facility, an AI-powered machine will check our pulse, and if we go to an internet store, we will see a recommended list customized by an AI tool. Actually, these are only a few examples of the benefits of AI in our daily lives. AI will provide a lot more in the future. With time, more industries, service sectors, and organizations will embrace this transformative technology to improve every human activity working process [92]. AI can help simplify and speed up processes in the community, society, country, and world by making the workplace more efficient, helping us make better decisions, or giving us direct help. AI can help by finding and fixing problems that people might not be able to see or fix on their own. But some people don't see the benefits of AI because they think it will cause people to lose their jobs and become less smart. In fact, speed, precision, efficiency, and scalability are the most important benefits of AI.

The 4IR will transform industries, service and other sectors so significantly that much of the work that exists today will not exist in next 25 years. It is crucial for us to understand the impact of these changes on all areas of our lives, including academic and learning institutions [93]. Currently, all graduates are confronted with a technologically transformed world in which AI, IoT, ML, Big Data, Cloud and Edge Computing, and social media create diverse opportunities and challenges for conventional education systems. As students consider their post-diploma or post-graduation lives, formal academic and learning institutions are pondering their fate, particularly in regards to employment. Nearly all contemporary technologies propelled by AI are transforming the world to such an extent that social concepts such as 'post-work' are increasingly defining the present era. This period requires skills that are not identical to those required during the Third IR, when information technology (IT) was the primary driver. It is estimated that artificial intelligence will be a US\$15 trillion industry within

the next seven years. Millions of unskilled and traditionally trained individuals will be laid off [94]. On the other hand, millions of jobs related to modern and hi-tech skilled will be created in the next few years [95].

5. Challenges and Risk of AI

The main problem is that AI systems are usually so complicated that it is hard to figure out or understand why they do, what they do and how they do? With the way AI works today, which is built on a very successful method called ML, we can't lift the lid and see how it works. So, we have to believe it. So, the task is to come up with new ways to keep an eye on or check up on the many places, where AI is now so important and no way to avoid it. Jonathan Zittrain, a professor of internet law at Harvard Law School, has said, 'There is a risk that the increasing complexity of computer systems could keep them from getting the scrutiny they need.' I'm worried about the loss of human freedom as our systems become more complicated and interconnected with the help of technology. He also said, 'If we set it and forget it, we may regret how a system changes and that there is no clear place for an ethical dimension to be considered.' Missy Cummings, who was one of the first female fighter pilots in the US Navy and is now an expert on drones, is the head of the Human and Autonomy Lab at Duke University in North Carolina. She has said, 'How will we be able to certify these systems as safe?' AI will need to be watched over, but how that should be done is not clear yet. At the moment, there are no methods that everyone agrees on. Cummings also said, 'Without an industry standard for testing these kinds of systems, it's hard for these technologies to be widely used.'

In a fast-paced world, regulatory organizations frequently find themselves playing catch-up. Companies are already investigating the effectiveness of utilizing AI to make parole decisions or detect sickness in several critical areas, such as the criminal justice system and healthcare. But, by delegating decision-making to computers, we risk losing control; we are to say that the system is making the correct judgment in each of these cases? Principal researcher at Microsoft Research Danah Boyd said that 'there are fundamental problems about the values that are being programmed into such systems and who is ultimately responsible for them' Regulators, civil society, and social theorists all want new technologies to be fair and ethical, but these conceptions are hazy at best.' The workplace is one arena filled with ethical quandaries. AI will let robots, do more complicated jobs and displace more human workers in future. For example, China's Foxconn Technology Group [96], which supplies Apple and Samsung, has announced that, it aims to replace 60,000 factory workers with robots. Ford's factory in Cologne, Germany [97] puts robots right on the floor alongside humans.

If technology kept getting more and more advanced, it would have a big effect on jobs and could have an effect on people's mental health. Ezekiel Emanuel, a bioethicist and former healthcare adviser to U. S. President Barack Obama,

said, 'If you look at what gives people meaning in their lives, it's three things: meaningful relationships, passionate interests, and meaningful work.' Meaningful work is a big part of what makes someone who they are. He also said that suicide, drug abuse, and sadness are more likely to happen in places where factories close down and people lose their jobs. In the end, this could lead to a need for more ethicists. Kate Darling, a law and ethics expert at the Massachusetts Institute of Technology, said, 'Companies will follow their market incentives, which isn't a bad thing, but we can't expect them to be ethical just because it's the right thing to do.' She also said, 'Having rules in place helps.' We've seen this happen with privacy and every time we get a new tool and figure out how to use it. Darling says that many well-known companies, like Google, already have ethics boards to keep an eye on how their AI is made and used. Some people say that it should happen more often. Darling also said, "We don't want to stop people from coming up with new ideas, but there may come a time when we need to set up some structures."

The details about who sits on Google's ethics board and what it actually does remain insufficient but in September, 2022; Facebook, Google, and Amazon launched a consortium that aims to develop solutions to the jungle of pitfalls related to safety and privacy AI poses [98]. Again OpenAI is an organization dedicated to developing and promoting open-source AI for the benefit of all. 'It's crucial that machine learning be researched freely and distributed via open publications and open-source code, so we can all share in the rewards,' said Google's Norvig. In reality, OpenAI is a non-profit artificial intelligence research organization. Their purpose is to enhance digital intelligence in the most likely method to serve humanity as a whole, without regard for financial gain. Because their study is free of financial constraints, they may concentrate on making a beneficial human impact [99]. Creating a brain trust of ethicists, technologists, and corporate leaders is essential if we are to develop industry and ethical standards and gain a comprehensive comprehension of what is at stake. It is a matter of utilizing AI to improve what humans are already good at. Zittrain also stated, "Our work is less concerned with a science fiction robot takeover and more concerned with how technology can be used to aid human reflection and decision-making, as opposed to completely replacing it."

A super-intelligence or also known as hyper-intelligence is a hypothetical agent that may also refer to the type or level of intelligence possessed by such an agent [100]. If research into AGI produced sufficiently intelligent software, it might be able to reprogram and improve itself and that leading to recursive self-improvement [101]. Science fiction writer Vernor Vinge named this scenario the 'singularity' [102]. It is difficult or impossible to know the capabilities of super-intelligent machines and that known as the technological singularity [103] and is an occurrence beyond which events are unpredictable or even unfathomable [104]. ML AI is also able to design tens of thousands of toxic molecules in a matter of hours [105]. ML AI is also able to design and build such robot, which can take over the control of nuclear

weapons of the military of any nations [106]. And that will be the great danger of entire civilization [107].

Robot designer Hans Moravec [108], cyberneticist Kevin Warwick, and inventor Ray Kurzweil have predicted that humans and machines will merge in the future into cyborgs; that will be more capable and powerful than either. This idea, called trans-humanism [109], Edward Fredkin [110] argues that 'AI is the next stage in evolution.' A survey of economists showed disagreement about whether the increasing use of robots and AI will cause a substantial increase in long-term unemployment [111], but they generally agree that, it could be a net benefit if productivity gains are redistributed [112]. Michael Osborne and Carl Benedikt Frey estimate 47% of U. S. jobs are at 'high risk' of potential automation [113], while an OECD report classifies only 9% of U. S. jobs are 'high risk' [114]. However, many middle-class and white-colour jobs may be eliminated by AI [115]. On the contrast, job demand is likely to increase for service and care-related professions. Whatever the case; AI, IoT, ML, and automation will definitely shrink the labour force/market [116].

Advanced AI can make centralized decision making and more competitive with liberal and decentralized systems like, markets [117]. Terrorists, criminals and rascal states may use other forms of weaponized AI like, advanced digital warfare and lethal autonomous weapons [118]. Battlefield robots are coming soon [119]. Health equity issues may also be worsen when many-to-many mapping are done without taking steps to ensure equity for populations at risk for bias [120]. However, until AI and robotics systems are demonstrated to be free of bias mistakes, they are unsafe [121]. Criticism has been raised about whether and to what extent the works created with the assistance of AI are under the protection of copyright laws [122]. The regulatory and policy landscape for AI is an emerging issue in jurisdictions globally [123]. Between 2016 and 2020, more than 30 countries adopted dedicated strategies for AI. Most EU member states had released national AI strategies [124]. In 2023, OpenAI leaders published recommendations for the governance of superintelligence, which most of the countries has believed that, it may happen in less than 10 years [125].

Computer scientists and philosophers have suggested that AI may become an unpredictable risk to humanity, if its rational capacities are not steered towards benefit to the humankind [126]. Economists have highlighted the risks of redundancies from AI, and speculated about unemployment if there is no adequate social policy for mass/general employment [127]. The term AI has also been criticized in the eyes of lawyer/legal community [128]. Two sources of concern are the problems of AI control and alignment: that controlling a superintelligent machine, or instilling it with human compatible values, may be a harder problem than honestly supposed [129]. Many researchers believe that, superintelligence would resist attempts to shut it off or change its goals; as such an incident would prevent it from accomplishing its present goals and that it will be extremely difficult to align super-intelligence [130] In contrast, skeptics

argue that superintelligent machines will have no desire for self-preservation. And it is not the reality [131]. Again sudden ‘intelligence explosion’ might take an unprepared human race by surprise [132]. However, in future jumping from subhuman performance in many areas to superhuman performance in virtually in many domains is possible like, AlphaZero in the domain of Go show that AI systems can

sometimes progress from narrow human-level ability to narrow superhuman ability extremely and rapidly [133]. We can do math without having to picture the universe of numbers, and we can figure out how gravity works in a different galaxy without having to step on it and to say that we have felt and measured it [134].

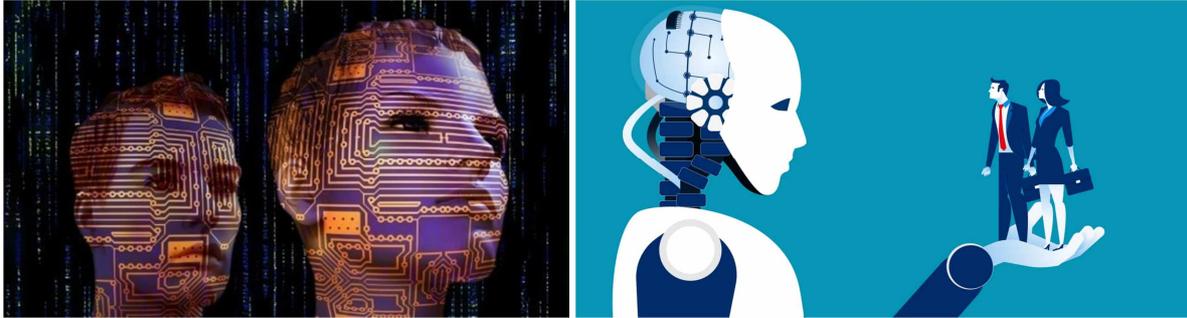


Figure 3. Machines may rule over humans in future [135] both certainty and uncertainty of life [136].

Data is an important input in the future AI economy. As a result, information policy and the laws governing data control and usage have raised to the top of the policy agenda. Without adequate public supervision, global technology businesses are shaping the data regulatory agenda in their own interests. This has already occurred in recent trade treaties. Furthermore, global AI corporations' monopolization of data makes it more difficult for emerging countries to catch up and build their own AI-based companies. Global corporations can leverage their access to enormous amounts of data from around the world to better optimize their products and services for consumers [137]. This makes it harder and harder for new companies in developing countries to catch up to the top companies. Europe has worked hard to make rules that make sure the benefits of new digital technologies are shared and the negative effects are kept to a minimum. For example, the EU has put forward plans to require sharing of data in order to stop monopolies from getting stronger by holding on to data. But giving people control over their own data won't be enough. Without proper regulation, people will give their data to digital giants and internet providers and get very little in return. There are just too many differences in information and power to guarantee a fair result [138].

Again, we need new rules about advertising targeting and algorithmic openness, but they are not enough on their own. Policymakers must be able to deal with the fact that pricing and promotion can be used to discriminate. There should also be stricter rules to protect privacy and stop the fast spread of false information, messages that support violence and hate, and other harmful messages, even if they are sent as part of a political campaign [139]. In the US, the Section 230 provision which reduces the accountability of internet companies; unlike other publishers is an example of a regulation that should be reconsidered [140]. As in the case of competition policy, the countries in which tech giants are based may not face the correct incentives to police the

worldwide behavior of their companies since they share in the rents that these companies earn around the world [141]. Developing countries need to cooperate and band together to have sufficient clout to impose regulation on global giants that reflects their developmental interests.

6. AGI and Future of World

A sort of fictitious intelligent agent is known as Artificial General Intelligence (AGI). The idea behind AGI is that it can learn to execute any intellectual endeavor that humans or animals can [142]. A different definition of AGI is an autonomous system that outperforms humans' at most economically valuable tasks [143]. Creating AGI is a primary goal of some AI research and companies such as OpenAI [144], DeepMind, and Anthropic [145]. Nowadays, AGI is a common topic in science fiction. AGI is also known as strong AI [146], or full AI [147], or general intelligent action [148]. Strong AI, usually known as artificial AGI or general AI, is a theoretical form of AI used to describe a certain mindset of AI development. If researchers are able to develop Strong AI, the machine would require intelligence equal to humans; it would have a self-aware consciousness that has the ability to solve problems, learn, and plan for the future [149]. People aren't sure if current deep learning systems like GPT-4 are an early but incomplete form of AGI or if we need to try something new [150].

Now question arise, is AGI a global threat? Several influential people in the field of AI fear that humanity's future may be irrevocably altered when superintelligent robots and that known as a singularity and which take over and either make humans completely dependent on them or do away with them altogether [151]. In engineering, a mechanical singularity is a position or configuration of a mechanism or a machine where the subsequent behavior cannot be predicted, or the forces or other physical quantities involved become infinite or nondeterministic [152]. Whereas,

University of Oxford philosopher Nick Bostrom defines superintelligence as 'any intellect that greatly exceeds the cognitive performance of humans in virtually all domains of interest' [153]. The late theoretical physicist Stephen Hawking famously said that if AI started to create better AI than human programmers, the result could be 'machines smarter than us by more than we are smarter than snails.' Elon Musk thinks that, AGI is the biggest existential threat to humans and has said so [154]. Efforts to bring it about, he has told, are like 'summoning the demon'. He has even expressed concern that his pal, Google co-founder Larry Page could accidentally shepherd something 'evil' into existence despite his best intentions [155]. Even Gyongyosi is not overly concerned about AI forecasts, but he believes that at some time, humans will no longer need to educate systems; they will learn and evolve on their own. He also said, 'I don't think the methods we're doing now in these areas will lead to machines that decide to kill us. I believe that in five or ten years, I'll have to reconsider that statement because we'll have different methodologies and approaches to these issues.'

Even though killing robots might stay the stuff of fiction, many people think they'll replace humans in different ways. The Future of Humanity Institute at Oxford University put out the results of an AI poll. This group had a lot of hopeful people. A median number of respondents said that machines will be able to write school essays by 2026, that self-driving trucks will make truck drivers obsolete by 2027, that AI will beat humans in retail by 2031, and that AI could be the next Stephen King, and the next Charlie Teo by 2049 and 2053, respectively [156]. The slightly jarring capper: By 2137, all human jobs will be automated. But, what will happen for humans themselves? Sipping umbrella drinks served by droids, no doubt. Diego Klabjan, a professor at Northwestern University and founding director of the school's Master of Science in Analytics program, counts himself an AGI skeptic or disbeliever. He told, 'Currently computers can handle a little more than 10,000 words. So, a few million neurons, but human brains have billions of neurons that are connected in a very intriguing and complex way, and the current state-of-the-art technology is just straightforward connections following very easy patterns. So going from a few million neurons to billions of neurons with current hardware and software technologies; I don't see that happening.'

As MIT physics professors and leading AI researcher Max Tegmark in 2018 has told, 'The real threat from AI isn't malice, like in silly Hollywood movies, but competence AI accomplishing goals that just aren't aligned with ours.' 'I definitely don't envision the situation where something wakes up and says it wants to take over the world,' said another Laird's expert. I think that's science fiction, and that's not how things will turn out.' Laird's biggest worry isn't about evil AI, but about 'evil humans using AI as a kind of false force multiplier' to do things like rob banks and steal credit cards, among many other crimes. So, even though he gets upset with how slowly things change, AI's slow growth may be a good thing. He also said, 'Maybe what we need is time

to understand what we're making and how we're going to work it into society.' But no one really knows. In fact, there need to be several big breakthroughs, and they could happen very quickly. Ernest Rutherford, a British scientist, said in 1917, "It's very, very hard to say when these conceptual breakthroughs will happen." [157]

The question now is whether the ethical use of AGI should be regulated. That includes striving to eliminate data bias, which corrupts algorithms and is now a thorn in the AI ointment. That involves developing and improving security systems capable of keeping technology in check. And it requires the humility to recognize that just because we can, does not imply we should. 'Most AGI researchers foresee AGI within decades, and if we just blunder into this unprepared, it will probably be the worst error in human history,' Tegmark stated in his TED Talk [158]. It could lead to a brutal global regime with more inequality, surveillance, and pain than ever before and maybe even the end of the human race. But if we steer carefully, we could end up in a great future where everyone is better off: the poor are richer, the rich are richer, and everyone is healthy and free to live out their dreams [160].

The idea is that 'AI poses an existential risk for humans' requires significantly more investigation [159]. Though it is controversial, yet that has been endorsed by many great thinkers, tech-giant owners and public figures like Elon Musk [160], Bill Gates [161], and Stephen Hawking [162]. AI researchers like Stuart J. Russell [38], Roman Yampolskiy [163], and Alexey Turchin [164], also support the basic idea and proposition of a potential threat to humanity [165]. Some of them like Bill Gates states that, 'people understand; but why some people are not concerned [166].' S. Hawking criticized widespread indifference in his 2014 editorial. Consequently, when confronted with possible futures with incalculable benefits and risks, specialists often do everything possible to ensure the best outcome, whether or not this is correct! S. Hawking explained, 'If a superior alien civilization sent us a message stating that we'll arrive in a few decades, we'd arrive in a few decades.' Would it suffice for us to respond, 'Okay, call us when you arrive; we'll leave the lights on?' Probably not, but this is essentially the case with AI [167]. The fate of humanity has occasionally been compared to the fate of gorillas threatened by human activities. Additional intelligence caused humanity to dominate gorillas, which are now vulnerable in ways that they could not have anticipated [168]. The gorilla has become an endangered species, not out of malice, but simply as a collateral damage from human activities [169].

LeCun told the BBC that people who worried that AI might be dangerous for humans did so because they couldn't see how it could be made safe. He said, 'It's like asking someone in 1930 how to make a turbo-jet safe. In 1930, there were no turbojets, and there was no AI that could work like a person. AI will get to the point where it is very safe and efficient, just like turbo jets did. YannLeCun, a sceptic, thinks that AGIs won't want to rule over humans and that we shouldn't give them human traits or try to figure out what

they want in the same way we do with humans. He said that people won't be "smart enough to make super-smart machines, but so stupid that they'll give them stupid goals with no safety measures [170]." On the other side, the concept of instrumental convergence suggests that almost whatever their goals, intelligent agents will have reasons to try to survive and acquire more power as intermediary steps to achieving these goals. And this does not require having emotions. Nick Bostrom gives the thought experiment of the paper clips optimizer [171]. Let's say we have an artificial intelligence whose only goal is to make as many paper clips as possible. The AI will soon realize that it would be vastly preferable if there were no humans, as they may choose to deactivate it.

AGI removing itself from the control of human owners/managers will be given or developing unsafe goals. So, the development of unsafe AGI, or AGIs with poor ethics, morals, and values or inadequate management of AGI will create existential risks and will be potential threats and that will always consider as the risks associated with AGI [172]. Many scholars who are concerned about existential risk support research into solving the hard 'control problem' to answer questions like, what kinds of safeguards, algorithms, or architectures can programmers use to make it more likely that their AI will continue to act in a friendly, rather than destructive way after it reaches superintelligence [157]? Solving the control problem is complicated by the AI arms race, which will almost certainly see the militarization and weaponization of AGI [173] by more than one nation-state, resulting in AGI-enabled warfare, and in the case of AI misalignment, AGI-directed warfare, potentially against all humanity [174]. There are others who argue that AI poses an existential threat. Skeptics have accused the thesis of being crypto-religious, with an irrational belief in the possibility of superintelligence replacing an irrational belief in an omnipotent God. Jaron Lanier said in 2014 that the belief that then-current robots were intelligent is 'an illusion' and a 'stunning con' perpetrated by the wealthy [175]. A lot of criticism says that AGI is not likely to happen in the near future. Gordon Bell, a computer scientist, says that humans will kill themselves off before they reach the artificial singularity. Former Baidu Vice President and Chief Scientist Andrew Ng said in 2015 that 'worrying about AI existential risk is like worrying about overpopulation on Mars when we have not even set foot on the planet yet [176].'

On the other hand, the CEOs of Google DeepMind, OpenAI and Anthropic, along with other industry leaders and researchers, issued a joint statement asserting that 'Mitigating the risk of extinction from AI should be a global priority alongside other societal-scale risks such as pandemics and nuclear war in 2023 [177].' If AI-producing sectors expand, it may result in increased revenues and employment of AI technological professionals within these existing firms, as well as the potential creation of entirely new economic activities in any country's society. Productivity improvements in existing sectors may be realized through faster and more efficient processes and decision making, as well as increased

AI technological knowledge and access to information available in societies [178]. Office workers seem to be the most impacted notably mathematicians, accountants or web designers [179]. AGI could boost these systems' autonomy, allowing them to make judgments, interact with other computer tools, and even control robotized bodies. We know that AI is getting better every day in a world of Google Glass and massive data, clever algorithms and Sire. Though these smart technologies and programmes may make our lives easier, they may also put us in risk. It has the potential to result in mass unemployment in near future [180].

AI and Next Global Consequence

With every new use of AI comes the scary question of whether or not robots will put people out of work. The judges haven't made up their minds yet. Some experts strongly disagree with the idea that AI will automate so many jobs that millions of people will be out of work. Other experts, on the other hand, see this as a serious issue. Social experts and people who think about AI thought that the organization of the workforce was changing, and that AI was basically taking over jobs. It lets us really build a market based on knowledge and use that to make better automation for a better way of life. It might be a bit abstract, but we should be worried about AI and robots taking our jobs [181]. Some expert, however, has speculated that algorithms are to blame for the loss of white-collar jobs like business analysts, hedge fund managers, and lawyers. Again, there is some disagreement on how the rise of AI will affect the workforce, but experts agree on several themes to look for. Some experts, on the other hand, feel that when AI is integrated into the working, it will actually create more jobs; at least in the medium term. Wilson believes that the change to AI-based systems will cause the economy to add occupations that will help with the transition. Some additional specialists AI will generate more riches than it consumes. However, it may not be dispersed equitably at first. The changes will be felt subliminally and will not be visible. A tax accountant will not get a pink slip and meet the robot who will now sit at her desk. It is possible that the next time the tax accountant searches for a position, it will be more difficult to locate the same one. Few optimistic analysts predict that AI in the workplace will fragment long-standing processes, resulting in the creation of many new human occupations to combine those workflows and offer satisfaction and progress.

The age of AI and 4IR is a transition, and it could take years or even decades for different parts of the workforce and almost every part of life to get used to it. So, these predictions are harder to make, but few gloomy experts worry that once AI is everywhere, these new jobs and the ones that were already there may start to go away. So, they wonder what will happen to those people in the long run. As we've seen in the past, there were ways to move from farming to making things to providing services. Now, that isn't true. What will happen to most people who work if all jobs are taken over by robots? As we've seen, technology makes more sense from a business point of view. For example, self-driving cars and AI concierges like Sire and

Cortana could take away up to 8 million jobs in the US alone as these technologies get better. What about the rest of the world? When all these jobs start to go away, we'll have to ask ourselves, 'What makes us useful [182]?' How do we define productivity? We must face the ever-evolving reality and rethink the foundations upon which our civilization is built. What is it that we do that contributes to society and makes us valuable as individuals? Since the technology won't wait for us, we need to have this discussion ASAP. It's time for us to develop a moonshot mindset [183]. to build inclusive, decentralized intelligent digital networks 'imbued with empathy' [184] that help humans aggressively ensure that technology meets social and ethical responsibilities [185]. We need some effective and new level of regulatory and certification process to ensure the best use of AI for entire human race [186].

AI could be data-driven as well as knowledge-driven. The next-generation AI breakthrough is knowledge inference and its application to all contexts. Several significant concerns with machine learning in 5G and future networks may give rise to new areas of research and extensions of present standards to support future networks [187]. So, if AI is going to be used by a lot of people and get better, there needs to be a strong guarantee of security. Since AI will be used in transportation and health care in the coming years, it must be presented in a way that builds trust and understanding and protects human and civil rights [188]. Policies and protocols, on the other hand, should handle ethical, privacy, and security concerns. As a result, multinational communities should work together to push AI to progress in a way that

benefits humanity. As AI becomes more incorporated into the workforce, it seems doubtful that all human employment will be eliminated. Instead, many experts believe that the workforce will become increasingly specialized in the future. These professions will necessitate more of what automation cannot currently deliver, such as creativity, problem-solving, and qualitative skills. Essentially, there will always be a need for people in the industry, but their responsibilities may change as technology advances. Specific skill sets will be in higher demand, and many of these professions will require a more advanced, technical skill set.

Two examples of the AI techniques are ML and deep learning and that can simplify this task. Training AI systems involves feeding the algorithms with suitable training data. AI systems are tremendously effective alternatives for any process involving intelligent decision-making since they can become experts and do it much more quickly than people [18]. This makes AI as an exceptionally powerful and enormously valuable technology, since it essentially allows computers to think and behave just like humans; and that should be much faster and much more processing power than the human brain can produce [189]. Today, AI can solve many problems by intelligently searching through much possible solution [20]. While AI is an interdisciplinary science with multiple approaches, advancements in machine learning (ML) and deep learning, in particular, are creating a paradigm shift in virtually every sector of the tech industry [190]. Actually, AI is the backbone of innovation in modern computing and unlocking value for individuals and businesses [191].



Figure 4. AI and the Singularity [192] and that may collapse global economy [193].

7. Conclusion

Now, we can do using AI to improve the quality of our service and the success of our business, company, or organization and it is a great change and improvement. If AI is deployed properly, it will allow us to maximize productivity across all departments, boost sales and customer happiness, and make better use of our resources. This is why AI is being used by so many different kinds of businesses and organizations these days. Some examples of these sectors include the automotive, healthcare, financial, manufacturing, energy, agriculture, military, telecommunication, cybersecurity, etc. Today, AI is showing to be a real game-

changer in the health care field. It is improving almost every part of the business, from keeping private records safe to using robots to help with surgeries. Increasing automation in manufacturing could cause wage gaps to widen, labour demand to drop, and skill premier to rise in most countries. However, the worst-case situation is that most of the progress made in development and reducing poverty over the last 50 years will be lost. In the past, new technologies led to more shared wealth and more equality between and within countries. However, new technologies may lead to more inequality on both fronts if policies aren't put in place to counteract them. The new era will be governed by different norms and necessitate as rural economies are vastly different from those in the models of a manufacturing economy that

dominated the middle of the 20th century. The competitive equilibrium paradigm may be even less applicable to the AI economy of this century than it was to the manufacturing economy of the 20th century. There will be a high degree of uncertainty regarding the conceivable technological development scenarios and their effects. This is the biggest challenges of extensive use of AI in future.

Challenge from AI at future will be more distinguishing. In the near future, white-collar and middle-class jobs will be threatened due to excessive use of AI. On the other hand, service and care occupations are expected to see a rise in demand. There is no doubt that, AI, IoT, ML, and automation will reduce the need for human workers as well as the size of the economy. The extreme challenge is ‘Singularity’ in which AI machines take over and fundamentally alter human existence either by making us dependent on them or eliminating us altogether. And another major threat is to the humanity on a global scale. Again, the end of humanity is possible at any time, if super-intelligent robots gain access to nuclear weapons or develop biological or chemical agents in mass scale. Those devastating or horrifying tasks could be carried out at any time, either by super clever robots themselves or by some ignorant human acting out of anger or malice or stupidity. There should be global coordination, regulations, rules to guide AI use and advancement in a positive humane path. There will be a need for humans in some capacities as AI grows more omnipresent in the workplace. But repeated job, continuous or monotonous task, mass production, line production, labourious job, will be taken by robots or AI used machinery/equipment. However, in the field of creativity, complicated problem-solving and qualitative abilities, advanced AI or super-intelligent robots cannot replicate, and there will be more demand of human in these positions. So, there will always be some demand for workers, though their specific functions may change as technology improves. There will be a shift in the kinds of talents that are in demand, and many of these positions will call for a higher level of technological expertise.

References

- [1] blog csu global. why-ai-important. Retrieved 17 June 2023, from <https://csuglobal.edu/blog/why-ai-important>
- [2] Dataconomy. Artificial-intelligence-and-self-driving. Retrieved on 17 June 2023 from <https://dataconomy.com/2022/12/28/artificial-intelligence-and-self-driving>
- [3] Mullainathan, Sendhil; Obermeyer, Ziad (May2022). "Solvingmedicine's databottleneck: Nightingale Open Science". *Nature Medicine*. 28 (5): 897–899. doi: 10.1038/s41591-022-01804-4. ISSN1546-170X4
- [4] Coiera E (1997). *Guide to medical informatics, the Internet and telemedicine*. Chapman & Hall, Ltd.
- [5] The ethical challenge facing artificial intelligence. Retrieved 17 June 2023. From <https://www.bbc.com/future/article/20170307-the-ethical-challenge-facing-artificial-intelligence> 2023.
- [6] Brynjolfsson, Erik; Mitchell, Tom (22December2017), What can machine learning do? Workforce implications, *Science*, 358 (6370).
- [7] meta-scientist-yann-lecun-dismisses-ai-threat-to-humanity; Retrieved on 17 June 2023 from <https://nagalandpost.com/index.php/meta-scientist-yann-lecun-dismisses-ai-threat-to-humanity>
- [8] JohnnyChLok-2020, *Artificial Intelligence How Impacts Global Economy*, Independently Published, ISBN: 9781661685263, 1661685269.
- [9] Pablo Padula-2023, *Are You Going to Lose Your Job to Artificial Intelligence?*, Amazon Digital Services LLC-Kdp, ISBN: 9798391007401.
- [10] JohnnyChLok- 2019, *Artificial Intelligence Future Ten Development Stages*, Independently Published, ISBN: 9781671040670, 1671040678.
- [11] How-human-civilization-will-embrace-artificial-intelligence, Retrieved on 17 June 2023 From <https://asiatimes.com/2018/05/how-human-civilization-will-embrace-artificial-intelligence/>
- [12] Digital-revolution-technology-power-you Retrieved on 17June 2023 From https://egfound.org/projects/digital-revolution-technology-power-you/?gclid=EAlaQobChMIw7f--YLk_wIVz14rCh0ppgnMEAAYyAAEgI2s_D_BwE
- [13] Alexander J. Means, Michael A. Peters, Petar Jandrić, *Educationand Technological Unemployment*, Springer Nature Singapore, ISBN: 9789811362255, 9811362254.
- [14] Korinek, Antonand JosephE. Stiglitz (2019), “Artificial Intelligence and Its Implications for Income Distribution and Unemployment,” in Agrawaletal.: *The Economics of Artificial Intelligence*, NBER and University of Chicago Press.
- [15] Korinek, Antonand DingXuanNg (2019), “Digitization and theMacro-Economics of Superstars,” working paper, University of Virginia.
- [16] Mr. Anton Korinek, Mr. Martin Schindler, and Joseph Stiglitz “Technological Progress, Artificial Intelligence, and Inclusive Growth” From <https://www.elibrary.imf.org/view/journals/001/2021/166/article-A001-en.xml>
- [17] Benjamin/Cummings. ISBN978-0-8053-4780-7. Archived from the originalon 26 July 2020. Retrieved 17 December 2019.
- [18] Luger, George; Stubblefield, William (2004). *Artificial Intelligence: Structures and Strategies for Complex Problem Solving* (5thed.).
- [19] Alonzo Church (1944), *Introduction to Mathematical Logic*, Princeton, NJ: Princeton University Press.
- [20] Poole, David; Mackworth, Alan; Goebel, Randy (1998). *Computational Intelligence: A Logical Approach*. NewYork: Oxford University Press. ISBN978-0-19-510270-3. Archived
- [21] Novák, V.; Perfilieva, I.; Močkoř, J. (1999). *Mathematical principles of fuzzylogic*. Dordrecht: Kluwer Academic. ISBN978-0-7923-8595-0.

- [22] Nilsson, Nils (1998). *Artificial Intelligence: A New Synthesis*. Morgan Kaufmann. ISBN978-1-55860-467-4.
- [23] Kowalski, Robert; Sergot, Marek (1986-03-01). "A logic-based calculus of events". *New Generation Computing*. 4 (1): 67–95. doi: 10.1007/BF03037383. ISSN1882-7055.
- [24] Blackburn, Patrick; deRijke, Maarten; and Venema, Yde (2001) *Modal Logic*. Cambridge University Press. ISBN0-521-80200-8.
- [25] Abe, Jair Minoro; Nakamatsu, Kazumi (2009). "Multi-agent Systems and Paraconsistent Knowledge". *Knowledge Processing and Decision Making in Agent-Based Systems. Studies in Computational Intelligence*. Vol. 170. Springer Berlin Heidelberg, ISBN978-3-540-88048-6.
- [26] Introduction to Probability Theory for Economists, From <https://www.lem.sssup.it/phd/documents/probpisanew.pdf>
- [27] Use of Probability in Economics, from <https://www.jstor.org/stable/4357039>
- [28] Domingos, Pedro (22September2015). *The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World*. Basic Books. ISBN978-0465065707.
- [29] Game theoretical mechanism design methods, From <https://ieeexplore.ieee.org/abstract/document/4644056>
- [30] Finding patterns in features and observations, From <https://dspace.mit.edu/handle/1721.1/107357>
- [31] Neural-networks, From <https://www.sciencedirect.com/journal/neural-networks>
- [32] Martins, Joaquim R. R. A.; Ning, Andrew (2021-10-01). *Engineering Design Optimization*. Cambridge University Press. ISBN978-1108833417.
- [33] Ojas, Raúl (1996). *Neural networks: asystematic introduction*. Springer, ISBN978-3-540-60505-8
- [34] Recurrent neural network, From http://scholarpedia.org/article/Recurrent_neural_network
- [35] *Artificial Intelligence for Cloud and Edge Computing*, From <https://link.springer.com/book/10.1007/978-3-030-80821-1>
- [36] Russell, StuartJ.; Norvig, Peter (2009). *Artificial Intelligence: A Modern Approach (3rded.)*. Upper Saddle River, NewJersey: Prentice Hall. ISBN978-0-13-604259-4.
- [37] Crevier, Daniel (1993). *AI: The Tumultuous Search for Artificial Intelligence*. NewYork, NY: Basic Books. ISBN0-465-02997-3.
- [38] Newquist, HP (1994). *The Brain Makers: Genius, Ego, And Greed In The Quest For Machines That Think*. NewYork: Macmillan/ SAMS. ISBN978-0-672-30412-5.
- [39] Poole, David; Mackworth, Alan (2017). *Artificial Intelligence: Foundations of Computational Agents (2nded.)*. Cambridge University Press. ISBN978-1-107-19539-4.
- [40] Frangoul, Anmar (14June2019). "A Californian business is using A. I. to change the way we think about energy storage". CNBC.
- [41] Brown, Eileen (5 November 2019). "Half of Americans do not believe deep fake news could target them online". ZDNet.
- [42] "Artificial intelligence, immune to fear or favour, is helping to make China's foreign policy| South China Morning Post". 25 March 2023.
- [43] Heath, Nick (11 December 2020). "What is AI? Everything you need to know about Artificial Intelligence". ZDNet.
- [44] Matz, S. C.; Kosinski, M.; Nave, G.; Stillwell, D. J. (28 November 2017). "Psychological target in gas an effective approach to digital mass persuasion". *Proceedings of the National Academy of Sciences of the United States of America*. 114 (48): 12714–12719.
- [45] Busby, Mattha (30April2018). "Revealed: how bookies use AI to keep gamblers hooked". *The Guardian*.
- [46] Celli, Fabio; Massani, PietroZani, Lepri, Bruno (2017). "Profilio". *Proceedings of the 25th ACM international conference on Multimedia*. doi: 10.1145/3123266.3129311.
- [47] How artificial intelligence may be making you buy things. BBC News. 9 November 2020. Retrieved 9 November 2020.
- [48] Rowinski, Dan (15January2013). *Virtual Personal Assistants & The Future Of Your Smartphone (Infographic)*, Read Write.
- [49] Galego Hernandes, PauloR.; Floret, Camila P.; Cardozo De Almeida, KatiaF.; DaSilva, Vinicius Camargo; Papa, João Paulo; Pontara DaCosta, KeltonA. (December2021). "Phishing Detection Using URL-based X AI Techniques". *2021 IEEE Symposium Series on Computational Intelligence (SSCI)*: 01–06.
- [50] Clark, Jack (8 December 2015 b). "Why 2015 Was a Break through Year in Artificial Intelligence". BloombergL. P.
- [51] Can artificial intelligence really help us talk to the animals?, *The Guardian*. 31July2022.
- [52] Melby, Alan. *The Possibility of Language (Amsterdam: Benjamins, 1995, 27–41)*, Benjamins.com. 1995, ISBN9789027216144.
- [53] Human quality machine translation solution by Tawithyou (inSpanish), From Tauyou.com.
- [54] Markoff, John (16 February 2011). "Computer Winson' Jeopardy!': Trivial, It's Not". *The NewYork Times*.
- [55] Steven Borowiec; Tracey Lien (12 March 2016), Alpha Gobeats human Gochampin milestone for artificialintelligence, *LosAngeles Times*.
- [56] Bowling, Michael; Burch, Neil; Johanson, Michael; Tammelin, Oskari (9 January 2015), Heads-up limit hold' empoker is solved, *Science*. 347 (6218): 145–149.
- [57] Facebook Quietly Enters Star Craft Warfor AI Bots, and Loses, *WIRED*. 2017.
- [58] The super hero of artificial intelligence: can this genius keep it in check?, *The Guardian*. 16 February 2016.
- [59] K, Bharath (2 April 2021), AI In Chess: The Evolution of Artificial Intelligence In Chess Engines, *Medium*.
- [60] Preparing for the future of artificial intelligence. National Science and Technology Council. OCLC965620122.
- [61] Gambhire, Akshaya; Shaikh Mohammad, Bilal N. (8 April 2020). Use of Artificial Intelligence in Agriculture. *Proceedings of the 3rd International Conference on Advances in Science & Technology (ICAST) 2020*. SSRN3571733.

- [62] The Future of AI in Agriculture, Intel, from <https://www.intel.com/content/www/us/en/big-data/article/agriculture-harvests-big-data.html>
- [63] G. Jones, Colleen (26 June 2019). "Artificial Intelligence in Agriculture: Farming for the 21st Century"
- [64] Moreno, Millán M.; Guzmán, Sevilla E.; Demyda, S. E. (1 November 2011). "Population, Poverty, Production, Food Security, Food Sovereignty, Bio technology and Sustainable Development: Challenges for the XXI Century". *Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca. Veterinary Medicine*. 1 (68).
- [65] Talaviya, Tanha; Shah, Dhara; Patel, Nivedita; Yagnik, Hiteshri; Shah, Manan (2020). "Implementation of artificial intelligence in agriculture for optimization of irrigation and application of pesticides and herbicides". *Artificial Intelligence in Agriculture*. 4: 58–73.
- [66] Olick, Diana (2022-04-18). "How robots and indoor farming can help save water and grow crops year round". *CNBC*.
- [67] How AI will automate cybersecurity in the post-COVID world. *Venture Beat*. 2020-09-06. Retrieved 2022-05-09
- [68] Anabel, Quan-Haase (2020). *TECHNOLOGY AND SOCIETY: social networks, power, and inequality*. Oxford University Press. ISBN978-0-19-903225-9.
- [69] Richtel, Matt (21 November 2010). "Growing Up Digital, Wired for Distraction". *The New York Times*.
- [70] Chen, Hsing-Chung; Prasetyo, Eko; Tseng, Shian-Shyong; Putra, Karisma Trinanda; Prayitno; Kusumawardani, SriSuning; Weng, Chien-Erh (January 2022). "Week-Wise Student Performance Early Prediction in Virtual Learning Environment Using a Deep Explainable Artificial Intelligence". *Applied Sciences*. 12 (4): 1885.
- [71] Yuskovych-Zhukovska, Valentyna; Poplavska, Tetiana; Diachenko, Oksana; Mishenina, Tetiana; Topolnyk, Yana; Gurevych, Roman (2022-03-23). "Application of Artificial Intelligence in Education. Problems and Opportunities for Sustainable Development". *BRAIN. Broad Research in Artificial Intelligence and Neuro science*. 13 (1Sup1): 339–356.
- [72] Beyond Robo-Advisers: How AI Could Rewire Wealth Management. 5 January 2017.
- [73] O'Neill, Eleanor (31 July 2016). "Accounting, automation and AI", *icas.com*. Archived from the original on 18 November 2016.
- [74] Chapman, Lizette (7 January 2019). "Palantir once mocked the idea of sales people. Now it 'shiring them". *Los Angeles Times*.
- [75] Marwala, Tshilidzi; Hurwitz, Evan (2017). *Artificial Intelligence and Economic Theory: Skynet in the Market*. London: Springer. ISBN 978-3-319-66104-9.
- [76] Marwala, Tshilidzi; Hurwitz, Evan (2017), "Efficient Market Hypothesis", *Artificial Intelligence and Economic Theory: Skynet in the Market*, Cham: Springer International Publishing, doi: 10.1007/978-3-319-66104-9_9.
- [77] "Algorithmic Trading". *Investopedia*. 18 May 2005.
- [78] Artificial intelligent systems, from https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_systems.htm
- [79] Housman, M. Why 'Augmented Intelligence' Is a Better Way to Describe AI. *AI News*, 2018.
- [80] Jordan, M. I.; Mitchell, T. M. Machine learning: Trends, perspectives, and prospects. *Science* 2015, 349, 255–260.
- [81] Nebula AI (NBAI)—Decentralized AI Blockchain Whitepaper, Montreal, QC, Canada: Nebula AI Team, 2018.
- [82] Unified architecture for machine learning in 5G and future networks. Technical Specification TU-TFG-ML5G-ARC 5G, January 2019.
- [83] Artificial intelligence and the future of humans, From <https://www.pewresearch.org/internet/2018/12/10/artificial-intelligence-and-the-future-of-humans/>, accessed on 23 June 2023.
- [84] Influence of Artificial Intelligence, From, <https://www.emerald.com/insight/content/doi/10.1108/BPMJ-10-2019-0411/full/html>, accessed on 23 June 2023.
- [85] Intelligent Transformation and sustainable innovation capability, from <https://www.sciencedirect.com/science/article/abs/pii/S1544612323003355>, Retrieved on 23 June 2023.
- [86] The Influence of Artificial Intelligence on the banking Industry, From https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3661469, Retrieved on 23 June 2023.
- [87] 7 changes artificial intelligence brings to the education sector, From <https://www.smartdatacollective.com/7-changes-artificial-intelligence-brings-to-the-education-sector/>, accessed on 29 June 2023.
- [88] AI and ml competence in middle eastern public education sector, From <https://akkomplish.com/blog/ai-ml-public-education-sector>, accessed on 29 June 2023.
- [89] Artificial Intelligence and the Future of Humans, From <http://tony-silva.com/eslefl/miscstudent/downloadpagearticles/AIhumanfuture-pew.pdf>, accessed on 23 June 2023.
- [90] Smart systems of innovation for smart places, From <https://www.sciencedirect.com/science/article/abs/pii/S0264837719317302>, accessed on 23 June 2023.
- [91] Artificial Intelligence and Public Health, From <https://www.mdpi.com/1660-4601/20/5/4541>, accessed on 23 June 2023.
- [92] The economic impacts of the 4IR on Bangladesh, From <https://www.thedailystar.net/recovering-covid-reinventing-our-future/blueprint-brighter-tomorrow/news/the-economic-impacts-the-4ir-bangladesh-2960641>, accessed on 24 June 2023.
- [93] 4IR. How to exploit the Fourth Industrial Revolution, From <https://nntc.digital/blog/4ir-how-to-exploit-the-fourth-industrial-revolution/>, accessed on 24 June 2023.
- [94] Kurzweil Ray, (2005). *The Singularity is Near: When Humans Transcend Biology*. New York: Viking. ISBN978-0-670-03384-3.
- [95] Harris, Karen, Austin Kimson, and Andrew Schwedel (2018), "Labor 2030: The Collision of Demographics, Automation and Inequality," *Bain and Company Reports*.

- [96] Hon Hai Technology Group, From <https://www.foxconn.com/en-us/>, Mr. Young Liu is the Chief Executive Officer and Chairman of Hon Hai Technology Group (FOXCONN), accessed on 10 June 2023.
- [97] Ford Germany, from https://en.wikipedia.org/wiki/Ford_Germany, accessed on 10 June 2023.
- [98] Partnership on AI Technology Firms, from <https://www.theguardian.com/technology/2016/sep/28/google-facebook-amazon-ibm-microsoft-partnership-on-ai-tech-firms>, accessed on 10 June 2023.
- [99] Introducing OpenAI, from <https://openai.com/blog/introducing-openai>, accessed on 10 June 2023.
- [100] Roberts, Jacob (2016). "Thinking Machines: The Search for Artificial Intelligence". *Distillations*. Vol. 2, no. 2.
- [101] Omohundro, Steve (2008). *The Nature of Self-Improving Artificial Intelligence*. Presented and distributed at the 2007 Singularity Summit, San Francisco, CA.
- [102] Vinge, Vernor (1993). "The Coming Technological Singularity: How to Survive in the Post-Human Era". *Vision21: Interdisciplinary Science and Engineering in the Era of Cyberspace*: 11. Bibcode: 1993vise.nasa...11V.
- [103] Reedy, Christianna (2017). "Kurzweil Claims That the Singularity Will Happen by 2045". *Futurism*, accessed on 10 June 2023.
- [104] Kurzweil, Ray (2005). *The Singularity is Near*. Penguin Books. ISBN978-0-670-03384-3.
- [105] Urbina, Fabio; Lentzos, Filippa; Invernizzi, Cédric; Ekins, Sean (7 March 2022). "Dual use of artificial-intelligence-power e-ddrug discovery". *Nature Machine Intelligence*. 4 (3): 189–191. doi: 10.1038/s42256-022-00465-9.
- [106] 1010. Chalmers, David J. (2016). "The Singularity". *Science Fiction and Philosophy*. John Wiley & Sons, Inc, doi: 10.1002/9781118922590.ch16. ISBN9781118922590.
- [107] Ray Kurzweil, *The Age of Spiritual Machines*, Viking; 1999, ISBN 978-0-14-028202-3. pp. 30, 32 Archived 2021-02-15 at the Way back Machine.
- [108] Moravec, Hans (1999). *Robot: Mere Machine to Transcendent Mind*. Oxford U. Press. p. 61. ISBN978-0-19-513630-2.
- [109] Moravec, Hans (1988). *Mind Children*. Harvard University Press. ISBN978-0-674-57616-2.
- [110] Dyson, George (1998). *Darwin among the Machines*. Allan Lane Science. ISBN978-0-7382-0030-9.
- [111] Acemoglu, D. and Robinson, J. (2012). *Why nations fail: the origins of power, prosperity, and poverty*. Random House Digital, Inc.
- [112] IGM Chicago (30 June 2017). "Robots and Artificial Intelligence". From www.igmchicago.org, accessed on 15 June 2023.
- [113] *Impact of Artificial Intelligence on Business*, From https://www.researchgate.net/profile/Neha-Soni-13/publication/325644986_Impact_of_Artificial_Intelligence_on_Business/
- [114] Lohr, Steve (2017). "Robots Will Take Jobs, but Not as Fast as Some Fear, New Report Says". *The New York Times*.
- [115] Morgenstern, Michael (9 May 2015). "Automation and anxiety". *The Economist*.
- [116] Autor, D. and Dorn, D. (2013). *The growth of low skill service jobs and the polarization of the us labor market*. *American Economic Review*, vol. forthcoming.
- [117] Harari, Yuval Noah (October 2018). "Why Technology Favors Tyranny". *The Atlantic*.
- [118] National Research Council (1999). "Developments in Artificial Intelligence". *Funding a Revolution: Government Support for Computing Research*. National Academy Press. ISBN978-0-309-06278-7.
- [119] Robitzski, Dan (5 September 2018). "Five experts share what scares them the most about AI".
- [120] Berdahl, Carl Thomas Baker, Lawrence; Mann, Sean; Osoba, Osonde; Girosi, Federico (7 February 2023). "Strategies to Improve the Impact of Artificial Intelligence on Health Equity: Scoping Review". *JMIRAI*. 2: e42936. doi: 10.2196/42936.
- [121] Dockrill, Peter, *Robots With Flawed AI Make Sexist And Racist Decisions, Experiment Shows* Archived 27 June 2022 at the Way back Machine, *Science Alert*.
- [122] Hugenholtz, P. Bernt; Quintais, João Pedro (October 2021). "Copyright and Artificial Creation: Does EU Copyright Law Protect AI-Assisted Output?". *IIC-International Review of Intellectual Property and Competition Law*. 52 (9): 1190–1216. doi: 10.1007/s40319-021-01115-0.
- [123] Law Library of Congress (U.S.). Global Legal Research Directorate, issuing body. (2019). *Regulation of artificial intelligence in selected jurisdictions*.
- [124] UNESCO Science Report: the Race Against Time for Smarter Development. Paris: UNESCO. 11 June 2021. ISBN978-92-3-100450-6.
- [125] "Governance of super intelligence". openai.com, accessed on 16 May 2023.
- [126] Giles, Martin (13 September 2018). "Artificial intelligence is often overhyped—and here's why that's dangerous". *MIT Technology*. Archived from the original on 11 March 2023.
- [127] McGaughey, E (2022), *Will Robots Automate Your Job Away? Full Employment, Basic Income, and Economic Democracy*, p. 51 (3) *Industrial Law Journal* 511–559, SSRN3044448.
- [128] EMc Gaughey, 'Will Robots Automate Your Job Away? Full Employment, Basic Income, and Economic Democracy' (2022) 51 (3) *Industrial Law Journal* 511–559, accessed on 11 May 2023.
- [129] "The AI Dilemma", From www.humanetech.com. Accessed on 10 June 2023.
- [130] Yudkowsky, Eliezer (2008). "Artificial Intelligence as a Positive and Negative Factor in Global Risk" (PDF). *Global Catastrophic Risks*: 308–345.
- [131] Dowd, Maureen (April 2017). "Elon Musk's Billion-Dollar Crusade to Stop the A. I. Apocalypse". *The Hive*. Archived from the original on 26 July 2018, accessed on 10 June 2023.
- [132] Turing, AM (1996). "Intelligent Machinery, A Heretical Theory". 1951, Reprinted *Philosophia Mathematica*. 4 (3): 256–260. doi: 10.1093/phimat/4.3.256.

- [133] Graves, Matthew (8 November 2017). "Why We Should Be Concerned About Artificial Super intelligence". *Skeptic* (US Magazine). Vol. 22, no. 2. Archived from the original on 13 November 2017, accessed on 10 June 2023.
- [134] Is it possible that Alpha Zero will eventually solve chess, From, <https://www.quora.com/Is-it-possible-that-Alpha-Zero-will-eventually-solve-chess>, accessed on 10 June 2023.
- [135] will machines rule over humans, From <https://www.indiatoday.in/technology/features/story/will-machines-rule-over-humans-in-future-the-answer-is-complicated-and-comforting-1319911-2018-08-21>, accessed on 25 June 2023.
- [136] will machines rule over humans, from <https://www.mrowe.co.za/blog/tag/uncertainty/>, accessed on 25 June 2023.
- [137] Acemoglu, Daron (1998), "Why Do New Technologies Complement Skills? Directed Technical Change and Wage Inequality," *Quarterly Journal of Economics*, 113 (4).
- [138] Acemoglu, Daron, and Pascual Restrepo (2019a), "Automation and New Tasks: How Technology Displaces and Reinstates Labor," *Journal of Economic Perspectives* 33 (2).
- [139] Aghion, Philippe, Benjamin F. Jones & Charles I. Jones (2017), "Artificial Intelligence and Economic Growth," NBER WP 23928.
- [140] Acemoglu, Daron, Andrea Manera, and Pascual Restrepo (2020), "Does the US tax code favor automation?" *Brookings Papers on Economic Activity* 2020 (1).
- [141] Brynjolfsson, Erik, Daniel Rock, and Chad Syverson (2019), "Artificial Intelligence and the Modern Productivity Paradox: A Clash of Expectations and Statistics," *The Economics of Artificial Intelligence: An Agenda*, Agrawal, Gans, and Goldfarb.
- [142] Hodson, Hal (1 March 2019). "Deep Mind and Google: the battle to control artificial intelligence". 1843. Archived from the original on 7 July 2020, accessed 27 June 2023.
- [143] Shevlin, Henry; Vold, Karina; Crosby, Matthew; Halina, Marta (4 October 2019). "The limits of machine intelligence: Despite progress in machine intelligence, artificial general intelligence is still a major challenge". *EMBO Reports*. 20 (10): e49177.
- [144] "Open AI Charter". openai.com, accessed on 27 June 2023.
- [145] Pfeifer, R. and Bongard J. C., *How the body shapes the way we think: a new view of intelligence* (The MIT Press, 2007). ISBN 0-262-16239-3.
- [146] Treder, Mike (10 August 2005), "Advanced Human Intelligence", *Responsible Nano technology*, archived from the original on 16 October 2019, accessed on 27 June 2023.
- [147] "The Age of Artificial Intelligence: George John at TEDx London Business School 2013". Archived from the original on 26 February 2014, accessed on 27 June 2023.
- [148] Newell & Simon 1976, This is the term they use for "human-level" intelligence in the physical symbol system hypothesis, accessed on 27 June 2023.
- [149] Strong AI, From <https://www.ibm.com/topics/strong-ai>, accessed on 27 June 2023.
- [150] "Artificial general intelligence: Are we close, and does it even make sense to try?". *MIT Technology Review*, accessed on 27 June 2023.
- [151] Hutter, Marcus (2005). *Universal Artificial Intelligence: Sequential Decisions Based on Algorithmic Probability*. Texts in Theoretical Computer Science an EATCS Series. Springer. ISBN 978-3-540-26877-2.
- [152] "Singularity", From <https://en.wikipedia.org/wiki/Singularity>, accessed on 27 June 2023.
- [153] Bostrom, Nick (2014). *Superintelligence: Paths, Dangers, Strategies*. Oxford University Press.
- [154] AI One of biggest risks to civilization, From <https://nypost.com/2023/02/15/elon-musk-warns-ai-one-of-biggest-risks-to-civilization/>, accessed on 27 June 2023.
- [155] Wang, Pei; Goertzel, Ben (2007). "Introduction: Aspects of Artificial General Intelligence". *Advances in Artificial General Intelligence: Concepts, Architectures and Algorithms: Proceedings of the AGI Workshop 2006*. pp. 1–16. ISBN 978-1-58603-758-1
- [156] Artificial intelligence future, from <https://builtin.com/artificial-intelligence/artificial-intelligence-future>, accessed on 27 June 2023.
- [157] Ernest Rutherford, British physicist, From <https://www.britannica.com/biography/Ernest-Rutherford>, accessed on 27 June 2023.
- [158] Kurzweil, Ray (2005), *The Singularity is Near*, Viking Press, 2005.
- [159] Baraniuk, Chris (23 August 2018). "Artificial stupidity could help save humanity from an AI takeover". *New Scientist*, accessed on 27 June 2023.
- [160] Sheffey, Ayelet. "Elon Musk says we need universal basic income because 'in the future, physical work will be a choice'". *Business Insider*, accessed on 27 June 2023.
- [161] Bill-Gates, From <https://www.britannica.com/biography/Bill-Gates>, accessed on 27 June 2023.
- [162] Ferguson, Kitty (2011). *Stephen Hawking: His Life and Work*. Trans world. ISBN 978-1-4481-1047-6.
- [163] Roman Yampolskiy on Artificial Super intelligence, Singularity Weblog, 7 September 2015, accessed on 27 June 2023.
- [164] Turchin, Alexey (1 March 2019). "Assessing the future plausibility of catastrophically dangerous AI". *Futures*. 107: 45–58. doi: 10.1016/j.futures.2018.11.007. ISSN 0016-3287.
- [165] Müller, Vincent C. (3 July 2014). "Risks of general artificial intelligence". *Journal of Experimental & Theoretical Artificial Intelligence*. 26 (3): 297–301.
- [166] Rawlinson, Kevin. "Microsoft's Bill Gates insists AI is a threat". *BBC News*. Archived from the original on 29 January 2015, accessed on 27 June 2023.
- [167] "Stephen Hawking: 'Transcendence looks at the implications of artificial intelligence—but are we taking AI seriously enough?'". *The Independent* (UK). Archived from the original on 25 September 2015, accessed on 27 June 2023.

- [168] Johnson, Mark (1987), *The body in the mind*, Chicago, ISBN978-0-226-40317-5.
- [169] Herger, Mario. "The Gorilla Problem Enter prise Garage", accessed on 27 June 2023.
- [170] "The fascinating Facebook debate between YannLeCun, Stuart Russel and Yoshua Bengio about the risks of strong AI". The fascinating Facebook debate betweenYannLeCun, Stuart Russel and Yoshua Bengio about the risks of strong AI (in French), accessed on 27 June 2023.
- [171] "Will Artificial Intelligence Doom The Human Race Within The Next 100 Years?" Huff Post. 22 August 2014, accessed on 27 June 2023.
- [172] McLean, Scott; Read, GemmaJ. M.; Thompson, Jason; Baber, Chris; Stanton, NevilleA.; Salmon, PaulM. (13 August 2021). "The risks associated with Artificial General Intelligence: Asystematic review". *Journal of Experimental &Theoretical Artificial Intelligence*. 35 (5): 649–663.
- [173] Torres, Phil (4 May 2019)."The possibility and risks of artificial genera lintelligence". *Bullet in of the Atomic Scientists*. 75 (3): 105–108.
- [174] Carayannis, EliasG.; Draper, John (11 January 2022). "Optimising peace through a Universal Global Peace Treaty to constrain the risk of war from a militarised artificial super intelligence". *AI & Society*: 1–14.
- [175] Hamblin, James (9 May 2014)."But What Would the End of Humanity Mean for Me?". *The Atlantic*. Archived from the original on 4 June 2014. accessed on 27 June 2023.
- [176] "AGI Expert Peter Voss Says AI Alignment Problem is Bogus|Next Big Future.com". 4 April 2023, accessed on 27 June 2023.
- [177] "Statement on AI Risk | CAIS". From www.safe.ai, accessed on 27 June 2023.
- [178] Johnny ChLOK·2021, *Researching Robots Can Bring Economic Growth Or Recession*, Independently Published, ISBN: 9798450498621.
- [179] "80% of workers will be exposed to AI. These jobs will be most affected". *euronews*. 23 March 2023, accessed on 27 June 2023.
- [180] Martin Ford, 2016, *The Rise of the Robots: Technology and the Threat of Mass*, Publisher: Basic Books, ISBN: 9780465059997.
- [181] Müller, VincentC.; Bostrom, Nick (2016). "Future Progress in Artificial Intelligence: A Survey of Expert Opinion". In Müller, VincentC. (ed.). *Fundamental Issues of Artificial Intelligence*. Springer.
- [182] Yudkowsky, Eliezer (2008), "Artificial Intelligence as a Positive and Negative Factor in Global Risk", *Global Catastrophic Risks*, Bibcode: 2008gr.book.303Y, ISBN9780198570509.
- [183] Moonshot Thinking, From <https://x.company/moonshot/>, accessed on 23 June 2023.
- [184] Awareness Imbued With Compassion, From <https://dharmaseed.org/talks/26820/>, accessed on 23 June 2023.
- [185] We Care Foundation: Philanthropy imbued with empathy, From <https://theshillongtimes.com/2022/10/16/we-care-foundation-philanthropy-imbued-with-empathy/>, accessed on 23 June 2023.
- [186] Regulatory framework proposal on artificial intelligence, From <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai>, accessed on 23 June 2023.
- [187] 5G mobile network architecture for diverse services, use cases, and applications in 5G and beyond. EU co-funded project, From <https://www.5gmonarch.eu>, accessed on 14 June 2023.
- [188] A definition of AI: main capabilities and disciplines. High-Level Expert Group on Artificial Intelligence, European Commission, April 2019.
- [189] Dreyfus, Hubert; Dreyfus, Stuart (1986). *Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer*. Oxford, UK: Blackwell. ISBN978-0-02-908060-3.
- [190] Artificial intelligence, From <https://builtin.com/artificial-intelligence>, accessed on 17 June 2023.
- [191] What is Artificial Intelligence (AI)? From <https://cloud.google.com/learn/what-is-artificial-intelligence>, accessed on 17 June 2023.
- [192] Future Tech: Artificial Intelligence and the Singularity, From <https://www.youtube.com/watch?v=MDZMXYWwYhI>, accessed on 23 June 2023.
- [193] Artificial intelligence singularity, From <https://sociable.co/technology/artificial-intelligence-singularity/>, accessed on 23 June 2023.