

A Review on New Challenges in AI and Software Engineering

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Abstract: *Artificial Intelligence (AI) has been around for a long time, but it's only recently become a mainstream concern. When it comes to cutting-edge research and development, At the moment, AI is at the top of the list. Over the next few decades, we will see a rise in the use of automated and cognitive technology. To be sure, this will occur. This study and related discourse focuses on identifying and discussing potential AI development inflection points. It also considers issues like technological unemployment, which could arise as a result of AI development in the future and affect job prospects in a wide range of industries. This paper also looks at the ethical and policy issues that might come up as AI gets better. Companies today need to be able to effectively manage both human workers and automated systems. There will be significant changes to software engineers' roles. Therefore, we need to reimagine the delivery of education so that it can prepare the next generation for a world with very different requirements than the one in which we currently find ourselves. Furthermore, there should be regulations in place. AI applications can only accurately represent a small, biased fraction of the world if only a few people have access to them. The work of researchers is important to make sure that AI is developed and used to help people and not to harm them.*

Keywords: Software Engineering(SE), Artificial Intelligence (AI)

I. INTRODUCTION

Things like computer vision, virtual reality, and artificial intelligence were the stuff of science fiction twenty years ago. Some forecasts of the AI revolution's effects proved accurate, while others were proven wrong. Machine learning, robots, NLP, VR, MS, simulation, cyber-physical environments, and system scheduling are just a few examples of the areas where advancements are being made today that are related to AI [1], [2]. Despite this, and despite the rapidity with which such developments are occurring, New terminology and innovations have not been introduced to us just yet. AI originated in the 1950s with the assumption that human understanding and cognition could be conveyed in a fashion the computer could understand and portray[3]. Information was represented and sought out mostly by symbolic AI. Systems have had success formalising human knowledge as data and guidelines [4]. Machine learning has advanced rapidly in recent decades, AI has been able to significantly broaden its scope of application. There are others who think that we are on the cusp of the age of general artificial intelligence (AGI) [3], marking the end of the AI epoch. One definition of artificial general intelligence is the capability of robots to do cognitive tasks typically associated with humans. Examples of the kinds of mental labour that fall within this category include perceiving, recognising voices, learning, and making decisions. According to some studies [4], the intelligence of these machines may one day exceed that of humans. We will have reached artificial super-intelligence when machines can perform certain activities better than humans (ASI).

As a result, we should expect to see what some have termed an "intelligent explosion": a virtuous cycle wherein humans build more intelligent robots, whose success leads to increased human intelligence, which in turn inspires the creation of still more intelligent robots, and so on. As a result, there is a risk that intelligence levels will rise to levels that are incomprehensible to humans. Some worry that if we don't prepare, artificial general intelligence (ASI) will be our civilization's final technological advance [3].



The purpose of this research is to explore the history of AI and its critical moments in development. This paper also seeks to hypothesise on the influence AI breakthroughs, such as skill shortages and rethought computer programmer roles, may have on future careers. The article also talks about the ethical and policy issues raised by the inevitable growth of AI.

This is the first of six parts that together form the study's overarching framework and introduction. The second part of the paper begins with an examination of the evolution of AI and a discussion of AI's tipping points. In the third section, we share our concerns about the future impact of AI on employment across several sectors. The future of software engineering and the impact of AI are examined in the fourth chapter. The topics of morality and public policy are addressed in the final section of this paper. Finally, the chapter discusses potential solutions to the many upcoming challenges.

II. TURNING POINTS OF AI

History is replete with examples of society and individuals having to make dramatic changes in order to go forward. The industrial and informational revolutions, for instance, have profoundly altered many areas of human culture and daily life. Massive shifts occurred as a result of these revolutions. We have entered a new period of rapid change, marked by a dramatic acceleration in the rate of technological progress. Autonomous vehicles and social robots, both of which were considered science fiction a century ago, will soon become commonplace [4][5]. What makes this time different, though, is the million-dollar question. Ask if the AI-led revolution will have as far-reaching and ubiquitous an impact as earlier ones.

When considering previous AI revolution cycles, it is important to remember that what was considered AI twenty years ago is not the same as what is considered AI today. This is a major factor to think about. It was once considered, for instance, that the task of translating written text from one language to another required the intelligence of human beings. However, any modern computer is capable of doing this operation [6]. In 1997, the first time a supercomputer beat a world chess champion, it was Deep Blue. Deep Blue, the most powerful computer at the time, easily won the Go match by detecting 60 billion plays in the three minutes each player had to make a move. However, Deep Blue lacked the capabilities now associated with AI, such as the capability to learn from its mistakes[5]. Most people still consider even the most advanced deep learning robots of today, like AlphaGo, to be examples of "weak" AI. Since there is a cap on the number of tasks that may be completed by any one piece of software, this is the case. This leads us to believe that AI evaluations are very contextual. The ability to quickly execute complex computations or to win against the greatest players in board games was once regarded as the definition of AI. Now, we think of AI as the ability to do cognitive tasks on par with the human intellect[6].

What changed our view on AI? First, machine learning has allowed computers that needed human input to understand the world to "sense" the environment without people. Second, supervised machine learning allows computers to learn from input-output pairings. Nowadays, massive data sets are built with machine learning already baked in. As a result, computers can now perform some jobs more efficiently than humans can [4, 8]. Instead of only using computers to finish off specified tasks, AI developers had to show computers how to learn [5].

The challenge now is to envision and prepare for the future of AI. Regarding this issue, remember that technological development does not occur in a straight line[5]. For instance, advancements in lighting did not come about due to better candle technology but rather the development of light bulbs. Also, it's important to remember that major advancements can and, more accurately, will be accomplished with AI. There is now only the question of when and how it will happen.

Numerous predictions about the future of AI have recently been made. The author is trying to picture what the world will be like in the "not so far future," and some of these predictions are just informed guesses based on his or her past experiences and the overall direction in which technological advancement is moving [7]. For example, theoretical physicist and futurist Professor Michio Kaku has written extensively on the role AI will play in the impending revolution. According to Kaku, the "fourth wave of affluence" will be propelled by AI, in conjunction with nanotechnology and biotechnology. Increases in wealth and prosperity, in Kaku's view, are the direct result of developments in science and technology. The initial influx of wealth may be traced back to the introduction of steam power, the engine of the industrial revolution. First was the industrialisation, then the electric, and ultimately the



internet and high tech. Kaku predicts that AI[8] will soon invade every aspect of human life. Contact lenses with internet connectivity are a real possibility for the future. These glasses will act as a portal through which we may instantly gain access to any and all information, such as the day's stock market totals or the forecast for the upcoming week's weather. It's widely anticipated that autonomous vehicles will prove to be safer on the road than human drivers. It will be as easy as blinking to transform from one place to another, freeing us from concerns about radar and parking. There will soon be a way to call a "robo-doc" from the comfort of our home when we're sick and have the machine diagnose and treat us. People think that in the near future, the human brain will be digitised and the "brain net" will take the place of the internet [9].

Other forecasts are based on predictions made before the industrial and digital revolutions. The analysis of past forecasts served as the basis for these forecasts. [10] anticipated the effects of the developing digital revolution and what they would mean by 2015. In his 2017 post[5], the author takes a look back at his past predictions, attempts to figure out what went right and what went wrong, and then applies that information to his future forecasts for AI. Since the author feels intelligent robots could destroy human governance, not knowing the repercussions of the AI revolution is terrifying.

The author claims the 1995 study accurately forecasted computer use. The paper didn't emphasise smartphones and the internet's significance until 2015. 1995 was before cloud computing, mobile access to scientific literature, GPS-based position discovery, and electronic commerce. Unexpectedly, a sub-\$700 phone has the computing capability of a 1995 supercomputer, allowing even small toddlers to enjoy cutting-edge web services. The research compares 1995 projections with actual outcomes. It concludes that AI will revolutionise services, ecommerce, production, jobs, and income [5].

More and more advanced AI and intelligent robots will bring about societal shifts that will unavoidably affect the function of humans. Scientists and futurists utilise four separate scenarios to predict the impact of AI in these areas. Optimists like [11] believe that AI will bring limitless wealth and flawless health to everyone on Earth. Humans will no longer have to perform menial tasks because robots will do them instead, freeing them up to do things they find more rewarding. Advances in nanotechnology and genetics will allow for the eradication of diseases, the slowing of the ageing process, and the enlargement of our cognitive capacities.

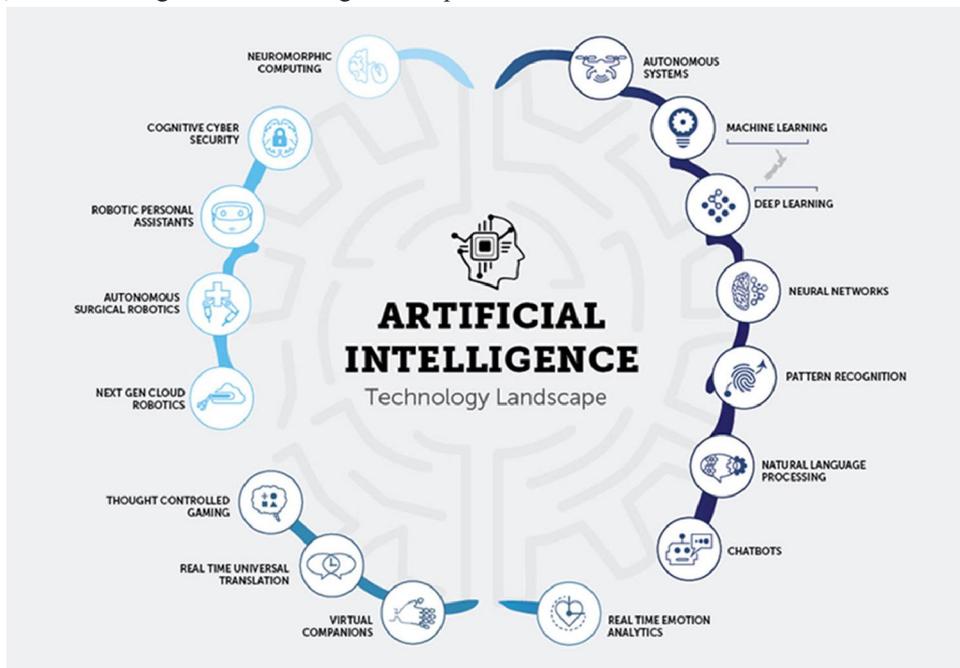


Fig.1 Artificial Intelligence

Pessimists fear that AI will lead to the extinction of humans. Many scholars think Kurzweil overestimated AI's favourable impact on society, including[12], [13]. As soon as machines can perform human labour more efficiently, they'll take over society and make all the key decisions, leaving humans with little choice but to follow. [14] wonders



what AI will do to politics and society when computers know us better than humans do. It's called A Brief History of the Future. [5] predicts that as AI applications like driverless cars become popular, humans would lose their freedom and not be able to conduct crucial duties or make important decisions like setting legislation and controlling nuclear power plants. Because robots lack emotional biases, they can accurately select applicants. Human voting rights could be eliminated. One-third of professionals interviewed by [3] said super intelligent AI would be "very damaging" to humans.

Realists believe AI can be controlled by rules. Although it is possible to train AI to mimic human intelligence, pragmatists argue that AI may also be used to increase human intelligence, keeping us one step ahead of machines at all times. As a result, efforts to improve cognitive abilities ought to be prioritised [15].

Finally, sceptics argue that AI won't be a threat to humanity because intelligence can't be codified into a system of laws [6]. One of the highest human qualities, creativity, is said to require deviation from the usual in order to flourish. One of the best things about being human is our innate creative potential. This means that activities like coming up with creative solutions to problems, thinking strategically, and taking calculated risks can't be done by algorithms, so robots can't do them [16].

III. MAN VS MACHINE

Numerous ongoing initiatives investigate the potential impact of AI and other emerging technologies on the future of work. People are concerned about job loss and want to know what kinds of positions will be eliminated. Has new technology and AI taken over? And do we think there will be completely new kinds of work in the near future?

AI is now competing with humans for jobs that were once thought to require human expertise alone. However, it's likely that AI will generate more jobs than it eliminates in the long run [4]. [17] argued that computers have eliminated the need for human telephone operators, bookkeepers, and cashiers. These tasks are easier and faster for computers to complete. Many studies on the subject of job loss due to technology (sometimes called "technical unemployment") are grounded on John Keynes's 1930 prediction. Many jobs become obsolete due to technological progress at a faster rate than new roles are produced, under Keynes' theory of employment [18]. The result is a rise in the unemployment rate. Technological unemployment is a primary cause of the increase in the jobless rate. Similarly, jobs that require repeatable, standardised actions can be readily automated away [19], [20]. This trend will eventually lead to the elimination of countless service sector jobs.

Numerous company norms and job openings shifted as a direct result of the Industrial Revolution. This pattern has persisted since the beginning of the digital revolution, which has caused many companies to reduce their workforces while simultaneously raising the prices of their goods and services by large margins. There are two main reasons why it is far harder to predict how the digital revolution will affect society than the industrial one. To begin with, AI technologies are rapidly replacing humans in jobs that require specialised intelligence. Since the first point led to this conclusion, it follows that the second conclusion is also valid. Second, and relatedly, the technological capability that will allow intelligent programmes to self-develop new programmes is rising dramatically and will continue to do so in the near future. When AI technology is combined with the internet, which is constantly growing and changing, the effects are huge for business management, operations, service delivery, product development, and even employment [6].

By definition, a revolution is associated with profound changes in social order. For instance, the industrial corporation emerged as a result of the industrial revolution, which harnessed the potential of machines to replace, augment, and improve human manual labour. This revolution makes more things, which lowers prices for consumers, expands the market, and makes people's lives better [6].

Costs have been drastically reduced thanks to the increased productivity brought on by the information technology revolution. This resulted from the substitution, improvement, and reinforcement of people's regular mental activities. However, the goal of the AI revolution is to someday become a formidable competitor to the industrial and digital revolutions by eventually replacing, upgrading, and making more efficient all the work that is currently performed by humans. AI holds significant promise because computers and robots will surpass human intellect in 20 years. As a result, AI will eventually pose a serious threat to any occupation that requires human labour. Future advancements in AI will cast doubt on the superiority of humans [6].



Researchers have never contemplated the notion that machines could have human emotions. When it comes to automated driving in heavy traffic, for example, [21] argue that the problem is unsolvable. The [Citation needed] The authors supported their stance by noting the various elements of human behaviour that make it challenging to repeat their findings. However, in October of 2010, Google presented the public with a fully autonomous vehicle. Job automation has expanded beyond routine tasks as a result of the quick pace at which technology is developing [22].

Because of the availability of massive amounts of data and the advancement of algorithms for machine learning, not only routine cognitive functions but also non-routine cognitive processes can now be automated. And when it comes to spotting trends in massive datasets, machine learning algorithms may often outperform human experts. AI has taken over many human jobs, including fraud detection and legal funding. Also, machines that can forecast candidates' performance and skills may eventually take over HR jobs[17].

[17]classified jobs into 3kinds according to their vulnerability to automation in the workplace: low, medium, and high. Jobs that are "at risk" of being automated away within the next two decades are called "at-risk jobs." The authors claim to be the first to conduct a quantitative study of how advances in AI technology will affect the job market in the future. Frey and Osborne estimate that about 47% of all employment in the United States is high-risk. The authors forecast that transportation and logistics will provide the greatest number of chances for employment in these fields. Workers in production and service jobs are more likely to be replaced by robots than those in administrative support roles. These occupations are most vulnerable to automation and AI.

The University of Nicosia believes that AI automation will increase, it will lead to fewer jobs in the farming and industrial industries. On the other hand, a rise in service sector employment is needed to compensate for the decline in manufacturing and mining. It is expected that the service sector will undergo massive changes, resulting in the elimination of a large number of jobs while simultaneously spawning a whole new set of opportunities [6].

AI and massive data stores have helped automate many manual, non-routine jobs. Jobs requiring complicated manipulation, observation, social skills, and creativity are unlikely to be replaced by intelligent machines in 20 years. Workers with lower levels of education may need to retrain for professions that are less likely to be automated as technology continues to improve [17]. [23] predicts that by the year 2030, one third of human labour will be automated. This study looked at data from 46 different countries. Those whose jobs have been automated away may find themselves looking for new employment elsewhere. Scientists, technology experts, engineers, healthcare workers, and accountants are hard to replace, according to a research. In the following decades, demand for teachers should rise. According to the report, people will require fresh training since their occupations change and technology makes new things feasible[24].

However, the rapid development of AI technologies is likely to sustain the current trend of decreasing payroll as more and more human jobs are automated. This is due to the fact that numerous tasks are now amenable to automation. The issue that job automation poses is in the areas of work that cannot be automated just yet. Taking this test will motivate you to improve your skills in order to perform better and make the most of the latest developments in AI and technology. Moreover, opportunities will expand for the bright people who can generate novel, imaginative ideas and help build the organization's innovation roadmap over the long run. Recruiting, hiring, motivating, and managing a company's talent pool is perhaps the most critical factor in a company's long-term success [6].

The role of the Chief Innovation Officer (CIo) has emerged during the past decade as CIO responsibilities have shifted (CIO). As the name suggests, this role's primary duty is to oversee the company's internal processes for managing innovation and change, as well as to promote the development of new ideas within the company. Business leaders are expected to start hiring Chief AI Officers (CAIOs) in the near future. These executives will be in charge of assessing the state of the art in AI and figuring out how to maximise the value of their company's data. The new Chief AI Officer (CAIO) will work to ensure that the company reaps the maximum possible benefits from deploying AI technology across all departments and functions [6].

The reduction of clerical jobs coincided with the rise in demand for data specialists, who saw their salaries soar as a result of the digital revolution's success. To get the new jobs that are expected to open up in specialised areas of AI, experts will need to get higher degrees.

For instance, the advancement of AI technology requires the knowledge of specialists in deep learning. There will be a wealth of new job opportunities as people move from traditional professions that are vulnerable to automation to ones

that need interpersonal skills, innovation, and creative problem solving. People with more money to spend will be able to hire more personal trainers, dietitians, private teachers, and cosmetics consultants, among other professionals.

In the next two decades, technology advances are expected to create jobs like chief security officer, cyber cityscape expert, quantum deep learning strategist, and augmented reality journey creator. The manager of AI business development will be in charge of managing AI sales. Meanwhile, it is the Cyber City Analyst's job to make sure all the city's data is moving freely and securely. Hiring a Chief Security Officer with financial and legal understanding in both traditional and cryptocurrencies would increase the company's clients and public visibility. Quantum Machine Learning Analyst is a top prospective job that requires great technological competence. These professionals will be tasked with leading the R&D efforts required to produce the next wave of innovative approaches. Augmented Reality Journey Builder's [25] design, construction, and customization features will facilitate the creation of the next generation of aesthetically appealing stories and books for consumers' excursions into augmented reality.

IV. SOFTWARE ENGINEERING AND AI

There is much discussion concerning the future of software developers in light of the rapid development of AI. Others think that software engineers will become even more important when AI robots become capable of writing their own code [26], while others think that AI intelligent algorithms will eventually replace them [7]. Intelligent algorithms developed by AI have been called the "software engineers" of the future.

Software engineering is progressing at a much faster rate than other branches of engineering because of its emphasis on finding answers to severe difficulties brought about by technological advancements. Software engineering must alter to meet evolving difficulties. As IoT [27] grows, for example, green SE and social SE have grown into their own fields. Data centers, for example, emit the same amount of greenhouse gases as greenhouses. Another issue that engineers must consider is the rise in power consumption due to the proliferation of smartphones. In addition, as software's importance grows, software engineers have a larger duty to consider the needs and growth of technical systems like cloud computing. Engineers in this field must be cognizant of the broader sociotechnical contexts in which the larger systems on which they operate depend and are used. A software engineer's knowledge of the technology they work with is only half of the equation. They must also have "soft skills" that allow them to manage, influence, negotiate, and work with other team members.

Software engineering is progressing at a much faster rate than other branches of engineering because of its emphasis on finding answers to severe difficulties brought about by technological advancements. But software engineering (SE) will have to change to adapt to the emerging challenges. Because of the rise of the Internet of Things (IoT) [28], for example, green SE and social SE have grown into their own fields. Data centers, for example, emit the same number of greenhouse gases as greenhouses. Another issue that engineers must consider is the rise in power consumption due to the proliferation of smartphones. In addition, as software's importance grows, software engineers have a larger duty to consider the needs and growth of technical systems like cloud computing. Engineers in this field must be cognizant of the broader sociotechnical contexts in which the larger systems on which they operate depend and are used. A software engineer's knowledge of the technology they work with is only half of the equation. They must also have "soft skills" that allow them to manage, influence, negotiate, and work with other team members.

In a similar vein, a 2018 study [7] by Guelfi stated his firm belief that software engineers will not be necessary in the near future of computers. Instead, "sense is" engineers will be put in charge of shaping society to meet people's needs, both in terms of the built environment and temporal enhancements. His ideal future sees the gradual elimination of computers and software in favour of more nuanced interactions with intelligent technologies that can be reached instantly through voice or screen. As a result, Senseware's engineers will be responsible for developing complex parts of machine learning systems. Each of these parts has the ability to foster the development of and refine existing perceptual skills. If this process could be automated completely, it might eliminate the need for software engineers as we know them now, or at the very least, it might create a new kind of engineering job.

However, the expansion of multiple AI-related industries, including machine learning, robotics, and natural language processing, is fueling the birth of brand-new product and service types [29]. Autonomous driving, speech recognition, and interaction with cyber-physical systems are all on the rise as useful tools. Achieving this objective will require major developments in every area of computer science, even ones that aren't generally regarded as crucial to the



progress of AI. Because AI systems will be integrated into healthcare, legal, and data management systems, advancements in computer science are needed in areas such as cybersecurity, human-computer interaction, programming languages, and formal verification. The handling of sensitive information is a part of this. This article will talk about how software engineers help make systems that are strong, efficient, and safe[1].

V. PRINCIPLES AND PUBLIC POLICES

As we saw in Part II, there is a significant gulf between the optimistic and pessimistic predictions made by the scientific community about AI. Ethical and moral concerns raised by the development of artificially intelligent computers with ASI or AGI capabilities should be addressed[30], [31]. This future is not completely out of the question, given that robots can already generate and test hypotheses, build themselves, and make discoveries. Extremely complex systems with the potential to be more intelligent than humans, but without the ability to explain their own behaviour, may be more difficult to exert control over than previously believed[4]. Once thinking robots start acting in a way we don't understand, pessimists argue, we'll be powerless to stop them. Others, called "pragmatists," say that it would be easy for humans to put a chip in any thinking machine that would automatically send it to "death row" if it ever did something wrong [6].

The problem is defining "ethical" or "moral" AI for robots. For example, social media posts and search histories can now be mined by smart algorithms for individually identifying information. This begs the question of "ethics of inference," which is used to describe cases where the interests of systems are not congruent with the interests of people[4]. An additional ethical worry is the fact that the algorithms that drive machine learning might perpetuate prejudice and discrimination. For example, the software that comes with Nikon cameras incorrectly identifies people of Asian origin as blinking, and the camera that comes with a Hewlett-Packard computer cannot recognise people with dark skin tones. Another example of bias is that women are less likely to browse Google ads for high-paying jobs [32]. Machine learning relies on user-provided data, hence this is a data problem. When Tay was released, it was a big thing. Tay began as a lovely and innocent robot, but after 24 hours she started tweeting racist and sexist things. People exploited this chatbot indecently and deviantly[31]. Users aren't solely accountable, though. A ProPublica investigation found that a widely used risk assessment tool was twice as likely to wrongly assign a high-risk score to black persons compared to white people [35]. According to the findings of the probe, this is the case. Companies who create these algorithms and use them to calculate risk indicators don't want the formulae used by competitors to get out.

It's important to remember that the data and images used by these algorithms were hand-picked by programmers. It's impossible to deny this reality. Like all previous technologies, AI will eventually adopt the values of its developers. Train a system on photographs of people with lighter skin tones, and it will have a harder time distinguishing between those with darker skin tones. This could develop into a serious problem. If a discriminatory or racist action is not contested, it will be codified into the system's underlying algorithm. The most significant challenge is the fact that algorithmic processes are sometimes undetectable. In the employment arena, for instance, a woman may not even be aware that some postings are being withheld from her because of her gender. It's possible that a group of black individuals who live in a certain neighbourhood won't find out that the area is being monitored more closely due to software. It is for this reason that great care must be taken during the process of teaching machine-learning algorithms. If this doesn't change, prejudice will be hardwired into tomorrow's AI systems. Although the present system is biased in many ways, we can have faith in a better future if we work to make AI more inclusive. Because of this, the public wants the government and public institutions, as well as the software engineering community, to be more accountable [32].

If AI is to become part of our everyday lives, we need a regulatory framework that governs people's rights while dealing with robots[4] and avoids the adoption of dangerous algorithms[4]. This is crucial for mainstreaming AI. AI might cause the salary gap between low- and high-end jobs to expand while destroying middle-class positions. Policies like boosting taxes on the wealthy are needed to lessen the impact of such disparities [6]. Once AI-powered machines are able to make decisions that humans cannot completely understand, it will be impossible to assign responsibility. To be sure, the software's creators have some responsibility, but AI's central tenet is that machines can learn and build their own systems. Lastly, there is a worry that if we automate the legal processes of human society into AI systems, we might lose the necessary element of subjectivity that is present in legal interpretation.

VI. CONCLUSION

In the decades between the 1950s and the 1980s, symbolic AI was the standard method for storing and retrieving data. Assuming human knowledge is represented as facts and rules, systems may excel in certain areas. In the 1990s, in response to a plethora of data and the demand for predictive computing, ML was developed. However, forecasting on its own is insufficient. While machine learning excels at making predictions, symbolic AI shines when it comes to justifying such forecasts. In terms of AI, we are still far from reaching our full potential. There is a steep learning curve associated with unsupervised learning. The next major hurdle will be developing machines that can read and comprehend human-edited documents. Unsupervised learning and common sense are beyond the capabilities of robots. Artificial general intelligence (sometimes known as "human-level AI," or "HAI"), still has some ways to go before it can be considered fully developed. On the other hand, advancements in both cognitive technology and automated processes are encouraging. Produce fresh employment opportunities and reconsider HR policies. Hundreds of jobs in brokerage and telemarketing could be lost. Studies of cyber cities and the design of augmented reality vacations are two potential new fields of study and employment. There will be hybrid human-machine and human-machine workforces in the future. Human resources must change in order to manage both humans and robots (such as cognitive agents, AI robots, and virtual workers) [36]. To keep up with these shifts and prepare students for jobs that don't exist yet but will be needed in the near future, our educational system needs significant overhauls. The significance of software is only going to increase going forward. As a result, software engineering roles will change, and colleges will have to adapt their curricula to better equip students for the challenges of the AI era. Despite the fact that this paper has attempted to address many of the issues that arise while dealing with AI, there are still many obstacles to be overcome. Researchers in the field of AI collaborate on new findings to bring them closer to the public's imagination. AI, data collection and use, and ethical laws should be the primary focus of legal professionals and academic experts. Artificial intelligence is a reflection of the values of those who developed it. The development of biased AI can be under the hands of a small group. The age of AI has arrived. Our choice. The question is whether AI will eventually take over human life. Alternatively, we can ensure that we and future generations play important roles in this change by investing in our education. When will smart robots be subject to human oversight? What steps do we need to take as scientists to ensure AI has a beneficial effect?

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