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# **AI and automation's impact on the labor market**

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**Abstract**

Automation and AI, using mathematical equations are starting to replace the human workforce. There are however assignments that are currently better suited for humans, namely tasks related to emotional, ethical, and logical thinking. This might not be the case forever considering the rapid development of AI and automation, that is already reflected on the manual labor market. There are a lot of perks to automation, despite the obvious downsides of lower educated parts of the population suffering in the workforce.

**Subject words**

AI, Artificial Intelligence, automation, labor market, unemployment

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# 1. Introduction

AI or Artificial intelligence can be defined in a lot of different ways by different groups of people. But the main way of defining it would be according to the following quotation by Jake Frankenfield.

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*”Artificial intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving.” [1].*

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The definition of automation is the following – *“the technique, method, or system of operating or controlling a process by highly automatic means, as by electronic devices, reducing human intervention to a minimum.”* [2]. AI together with automation is becoming more commonly used every day. It all started when AI was first brought up in the 1940s, when the first computer, EDVAC, based on von Neumann’s ideas was built [3]. Since then humans have been progressively normalizing it. It has come to a point where people rarely acknowledge that behind nearly all of our devices, there is an AI – system. An AI can be developed to automate – to do a lot of the same things that a human can do but more efficiently [2].

Not only does this provoke emotion. Most people do not know what the duo of human intelligence and AI can be capable of, which can be frightening for not just the manual labor market, but also for the people in it.

## 1.1 Purpose statement

The purpose of this report is to inform and analyze the social dilemma of automation and AI’s development in our society.

## 2. The impact of AI on the labor market

Artificial Intelligence has rapidly become a complex system, to an extent where the average human does not fully understand the techniques behind it [4]. During most daily activities humans are unaware of the fact that the things they use throughout the day have something to do with AI.

It is significantly harder and time consuming to teach a human than a robot. Instead a program can be made to force the robots to replicate the same actions, in contrast to humans where people tend to learn in different ways and speeds. [5]. However, the AI is not comparable to the human mind.

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*"...AI doesn't really have anything to do with human intelligence. Yes, some AI is modeled to simulate human intelligence, but that is what it is: a simulation. When thinking about AI, notice an interplay between goal seeking, data processing used to achieve that goal, and data acquisition used to better understand the goal. AI relies on the algorithms to achieve a result that may or may not have anything to do with human goals or methods of achieving those goals. ... "* [6].

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The AI lacks emotional response such as feelings or empathy and relies solely on mathematical calculations. It is something that could be taught and applied to AI in the future, but it might never be as good as the human mind when it comes to emotional intelligence [6]. Which brings up the topic of the moral and ethics of the AI. There have been many debates about whether AI with empathy would be ethical for humans to create [7]. There is no way to be sure that the AI makes the ethically right decisions. Additionally, it could eliminate more jobs from the labor market that currently requires human supervision. For now, the decision-making jobs will be managed by humans.

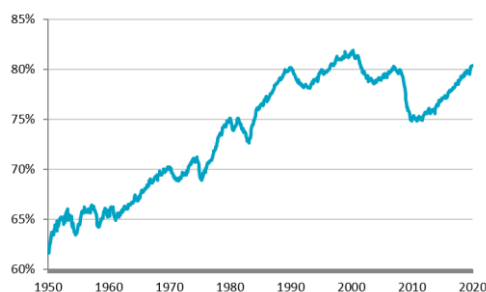
Jobs pertaining to manual labor, such as factory work and cleaning, may disappear and become transferred to the automated workforce soon [8]. Table 1 shows the probability of robots replacing human professions the coming 20 years.

<b>Profession</b>	Tele- marketers	Accountant and auditors	Retail sales- persons	Technical writers	Real estate sales agents	Word processors and typists
<b>Chance</b>	99%	94%	92%	89%	86%	81%

*Table 1. Probability of robots taking over different professions in the next 20 years [9].*

There have been lots of examples involving tool innovations. The instant a more efficient way of doing something is found, the older tools are abandoned, and newer methods are set to do the work. An example of that would be from the beginning of human evolution where humans carried all their resources. Later, it was discovered that the horses could carry humans and their goods. Subsequently, cars, trains and other transport options were created due to the invention of engines and electricity. In present time there are self-driving cars and public transports attributed to the development of AI and automation. In the case of chauffeurs working in the public transport, they would become obsolete in the face of AI [10]. According to the American Market Watch, automation could take over around 30 million jobs in the US [11]. This could lead to unsustainable development in our society like – poverty, hunger, and conflict.

Looking at the statistics from the previous 70 years in Picture 1. Jobs lost due to automation have been increasing drastically over the years and the number is rising.



*Picture 1. Jobs lost to automation [12].*

On the other hand, AI makes a considerable amount of unskilled jobs disappear, but create new jobs which require a higher degree of education. That kind of change in the labor market gives people a chance to have interesting, healthy, or safe job environments. The current dangerous and back-breaking jobs will be replaced with robots. Examples include working at a nuclear power plant and logging work. There are many perks to the newly automated job positions. But if the change is too sudden there could be many older generations that could struggle with finding a new occupation [13].

### **3. Discussion**

Perhaps in a hundred years AI might have empathy and feelings. Which could mean it could replace more job positions that call for decision making. These jobs require all ethical and emotional thinking that robots are currently not capable of, however with enough knowledge about human emotions it could be implemented to the AI [7]. Instead AI is assigned to Industrial work that is always developing. AI produces fewer mistakes, which in turn reduces the amount of energy and resources needed to carry out said task. However constant improvements to the hardware would translate into a growing need for resources, leading to a potential waste increase.

The future of the AI might also reduce the amount of IT jobs needed. At some point, the AI and automated robots must be monitored and repaired. New robots could be introduced to do the repairing and monitoring of the others. That would mean that there would not be as many mechanics and IT workers needed.

Different age groups adapt differently. This conundrum of an older generation mixed with an unwillingness to change could cause the socio-economic situation, involving a great deal of people, to plummet. Which in turn could lead to protests and dissatisfaction from the general population.

Currently, during the ongoing pandemic, it has been easier than ever to replace people with robots [14]. The number of unemployed workers has drastically increased as it is the easiest way to stop workplace infections. People who got sick and could not go to work

got replaced by robots that would not encounter similar health hazards other than the occasional maintenance work. Robots can work all day long without food or the need of a break. All their energy comes from the power outlet. The use of robots saved the economical situation during the pandemic. Food and daily supplies were still supplied though the use of automation [14]. Which slowed down the negative effects on the economical situation. On the other hand, a lot of people lost their jobs, which in turn increased the amount of hunger and worsened the overall quality of life [15].

## **4. Conclusion**

To summarize, AI and automation are very complex systems, but they are not complex enough to make decisions based on emotional, ethical, and logical levels. That means that there will not be any change in the decision-making jobs market soon.

Most of the jobs lost in the past few years was a byproduct of automation, these jobs are mainly classified as manual labor. The efficiency of these jobs is now greater, and less resource heavy compared to before. Although the decreased need for these jobs could have brought more poverty, hunger, and conflict to society.

The global pandemic has put great strain on society, something that has been alleviated to a great extent using robots.



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