Economic and Social Council

The labour market and AI

Research Report

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"Out of this world"

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Introduction

Artificial Intelligence (AI) is probably one of the biggest, most important and simultaneously the most dangerous innovation of the Contemporary Era. Nowadays our world can not be imagined without the usage of this technology. It is present when we listen to music, when we use email, during shopping and in countless everyday activities including some where we do not even recognise its presence. With the rise of the more complex AI the labour market began to undergo some serious changes. Due to the nature of a business, it seeks the utmost efficiency and cost effectiveness which results in the higher integration of this technology into various industries by automating tasks which previously only humans were able to carry out. The effect of this shift is mainly felt in the white-collar job position such as finance, healthcare customer service and in the analysing processes whether it is military reconnaissance, the perfecting of data mining processes based on mathematical models and in the optimisation of complex algorithms. While AI can increase productivity, streamline processes, and create new job opportunities in emerging tech sectors, it also poses challenges such as job displacement, changes in skill requirements, and concerns about economic inequality. The need for regulations and restrictions regarding the usage of Artificial Intelligence is higher than ever in order to prevent the potential large scale of job cuts among highly educated individuals and the crash of the labour market in the age of the accelerated development of groundbreaking technologies

Definition of Key Terms

Artificial Intelligence:
Artificial intelligence (AI) is a set of technologies that enable computers to perform a variety of advanced functions, including the ability to see, understand and translate spoken and written language, analyse data, make recommendations, and more.

White-Collar Job:
A white-collar worker typically works in an office setting, performing administrative or managerial tasks. This class of workers stands in contrast to blue-collar workers, who traditionally perform manual labour at their jobs.

AI Winter:
AI winter is referred to hype generated by over promises from developers, unrealistically high expectations from end users, and extensive media promotion.

General Overview

The brief history of AI

Artificial Intelligence, despite being considered the innovation of the 21st century by many, actually dates back to the 1950, when the concept of it has been first proposed by Alan Turing, where he shared an idea of a machine which initially works as coded but later on begins to expand beyond its original function. In 1956 the term artificial intelligence was coined at the Dartmouth Conference. The 1970's and 1870's brought some promising results in the field of AI such as ELIZA, the first chatbot, and Shakey, the first robot which could navigate in an environment relying on its sensors. However, as the initial excitement wore off, so did the research and developments of AI slowed down, this period from the 1970's to the 1990's is being called the AI winter. The late 1980's to 1990's came with new breakthroughs in the development of AI, such as the first driverless car, and deep blue the unbeatable chess machine. In the 21st century AI has seen the greatest improvements since its beginning. The rapid development of the technology made previously unimaginable things feasible, such as the procession of human emotions by a program, self-driving rovers on an unknown terrain with different environmental conditions from Earth, the introduction of robot-assistants such as Siri and Alexa, the first real human like robot, and the first generative AI-s which are capable of generating Pictures text and even short clips just by giving them some simple guidelines

Types of AI

Based on capability

Narrow AI:
Narrow AI, also known as artificial narrow intelligence (ANI) or weak AI, describes AI tools designed to carry out very specific actions or commands. ANI technologies are built to serve and excel in one cognitive capability and cannot independently learn skills beyond its design. They often utilise machine learning and neural network algorithms to complete these specified tasks. Some examples of narrow AI include image recognition software, self-driving cars and AI virtual assistants.

General AI:
Artificial general intelligence (AGI), also called general AI or strong AI, describes AI that can learn, think and perform a wide range of actions similarly to humans. The goal of designing artificial general intelligence is to be able to create machines that are capable of performing multifunctional tasks and act as lifelike, equally intelligent assistants to humans in everyday life.

Super AI
Artificial superintelligence (ASI), or super AI, is the kind we see in science fiction. It's theorised that once AI has reached the general intelligence level, it will soon learn at such a fast rate that its knowledge and capabilities will become stronger than that even of humankind. ASI would act as the backbone technology of completely self-aware AI and other individualistic robots. Its concept is also what fuels the popular media trope of "AI takeovers." But at this point, it's all speculation.

Based on functionality

Reactive AI:
The most basic type of AI that solely reacts to specific inputs with pre-determined outputs. They can respond to immediate requests and tasks, but they aren't capable of storing memory, learning from past experiences or improving their functionality through experiences. Additionally, reactive machines can only respond to a limited combination of inputs. Reactive machines are the most fundamental type of

AI. In practice, reactive machines are useful for performing basic autonomous functions, such as filtering spam from your email inbox or recommending items based on your shopping history. But beyond that, reactive AI can't build upon previous knowledge or perform more complex tasks. Examples of such software are IBM Deep Blue (chess AI), Netflix Recommendation Engine.

Limited Memory AI:

Limited memory AI can store past data and use that data to make predictions. This means it actively builds its own limited, short-term knowledge base and performs tasks based on that knowledge. The core of limited memory AI is deep learning, which imitates the function of neurons in the human brain. This allows a machine to absorb data from experiences and "learn" from them, helping it improve the accuracy of its actions over time. Today, the limited memory model represents the majority of AI applications. It can be applied in a broad range of scenarios, from smaller scale applications, such as chatbots, to self-driving cars and other advanced use cases. Examples to such technology are Chatbots, Virtual assistants and Self-driving cars

Theory of Mind AI:

Theory of mind refers to the concept of AI that can perceive and pick up on the emotions of others. The term is borrowed from psychology, describing humans' ability to read the emotions of others and predict future actions based on that information. Theory of mind hasn't been fully realised yet and stands as the next substantial milestone in AI's development. Theory of mind could bring plenty of positive changes to the tech world, but it also poses its own risks. Since emotional cues are so nuanced, it would take a long time for AI machines to perfect reading them and could potentially make big errors while in the learning stage. Some people also fear that once technologies are able to respond to emotional signals as well as situational ones, the result could mean automation of some jobs.

Self-aware AI:

Self-aware AI describes artificial intelligence that possesses self-awareness. Referred to as the AI point of singularity, self-aware AI is the stage beyond theory of mind and is one of the ultimate goals in AI development. It's thought that once self-aware AI is reached, AI machines will be beyond our control, because they'll not only be able to sense the feelings of others but will have a sense of self as well. An example for this is Sophia the chatbot.

Transformation of industries

Manufacturing

Robotics controlled by Artificial Intelligence enhance the efficiency and productivity of assembly lines and are able to forecast potential need of maintenance before the defect causes vast problems. Moreover, these robots can run at 24/7 with none to minimal human intervention, operate with almost negligible rate of making mistakes and also provide optimisation the supply change by analysing and predicting demand for further supplies

Healthcare

Artificial Intelligence with the latest technology is able to transform healthcare by providing faster and more accurate results of diagnostics and can recognise potential patterns that humans could neglect among enormous amounts of data, while providing personalised medicine or treatment plan to the patient and also answer potential inquiries from them. AI highly accelerates the discovery of new drugs due to its ability to process almost any amount of data.

Finance

Artificial Intelligence makes various parts of the financial sector more effective by making split second decisions and also analysing patterns of certain processes that humans wouldn't be able to due to the abundance of data. AI is incredibly good at detecting fraudulent activities by analysing datasets, carrying out algorithmic trading due to its enhanced analysing skills and decision-making skills.

Moreover, this technology revolutionises Credit scoring and risk assessment, personalised banking and also regulatory compliance

Retail

The fourth sector which has seen a tremendous improvement by implementing the AI is retail. Algorithms can provide the customers with personalised recommendations based on their habits, while it tracks the supply and adjusts the prices of the store by analysing sales history of different goods and services. Customer services are more effective with the introduction of chatbots because they can satisfy infinite amounts of customers at the same time. And nonetheless AI can enhance the in-store experiences with the innovation of self-checkouts, and sensor tracks which records what have the consumer bought and upon exiting the shop the bill automatically being handed out through an app.

Transportation

Another interesting area where AI is utilised is transportation. Obviously the most well-known application of the technology is the self-driving cars, but it also provides route optimisation during navigation. It has also greatly improved fleet management, due to the fact that it constantly analyses the condition of the vehicle, therefore it can indicate when it is time for maintenance. And nonetheless with the technology becoming more and more widespread, it can also analyse patterns in traffic and the state of the roads, enhancing the development of the city.

Major Parties Involved

United States of America:

As it is usually the case with the new technologies, the USA is a global leader in AI development, the government has an active role in shaping policies related to AI and its impact on jobs. Agencies like the White House Office of Science and Technology Policy and the Department of Labor are key elements.

European Union:

The European Union has been proactive in regulating AI and addressing its implications in the labour market, with policies such as the Artificial Intelligence Act. The European Commission plays a central role, as do various member states.

China:

Similarly to the USA when it comes to developing a new technology, China is also among the world leaders of it. With its aggressive AI development agenda, China is heavily involved in shaping the future of Artificial Intelligence in the workplaces. The Ministry of Industry and Information Technology (MIIT) and other state-led initiatives focus on AI integration and its various effects on the labour market.

International Labour Organisation:

The International Labour Organisation has been closely examining the implications of artificial intelligence (AI) and other advanced technologies on the world of work. As AI technologies advance, they impact labour markets, employment patterns, and workplace conditions globally. The ILO has addressed these issues through its research, reports, and policy recommendations, particularly focusing on how AI may affect labour rights, social protection, and equitable job opportunities.

World Economic Forum:

The World Economic Forum (WEF) has been deeply engaged in discussions on the impact of artificial intelligence (AI) on global economies, industries, and societies. Through its initiatives, reports, and

global gatherings, the WEF aims to shape policy, foster collaboration, and ensure that AI development and deployment are ethical, equitable, and beneficial for all.

Open AI:

OpenAI, the creator of one of if not the most popular and widely used AI system, the ChatGPT, is one of the leading organisations in artificial intelligence research and development, has a unique perspective on AI. Its mission and approach are centred around ensuring that AI benefits humanity as a whole while addressing the challenges and risks associated with powerful AI systems.

IBM:

IBM has been a pioneer in artificial intelligence (AI) for decades, playing a crucial role in the development and deployment of AI technologies for businesses and industries worldwide. IBM's approach to AI, often referred to as "AI for business", emphasises practical applications that solve real-world problems, enhance decision-making, and drive efficiency across sectors. IBM also focuses on the ethical and responsible use of AI, ensuring that AI technologies are transparent, secure, and trustworthy.

Timeline of Events

- **1942-** The Bombe machine, designed by Alan Turing during the Second World War helped decoding the German coded messages (Enigma) by speeding up the process. This greatly contributed to the ultimate victory of the allied
- **1961-** Creation of Unimate, the first industrial robot by George Devol, marked the beginning of automation alongside the assembly line in factories. Despite its staggering weight (4000 lbs/1814.37 kg), the machine was proven to be highly useful by doing highly dangerous tasks, which could lead to poisoning or limb-loss for a human.
- **1964-** The creation of Eliza, the first ever chatbot by Joseph Wiezenbaum, marked the beginning of the development of AI powered chatbots. Nowadays such technology is being used in customer services.
- **1969-** Shakey, the first general-purpose mobile robot. It could navigate by detecting details of the environment and also communicate with others during the process. This invention marked the beginning of the first AI driven robots that could navigate by reacting to its surroundings in real time.
- **1997-** DeepBlue, a chess-playing computer created by IBM, beat Garry Kasparov, the reigning chess legend. This showed the people what machines are capable of.
- **1998-** Kismet, the first emotionally equipped robot, was able to demonstrate emotional and social interactions with humans. The robot was equipped with outputs responsible for facial and vocal expressions and also motor capabilities to adjust the direction of its face and eyes. It was able to portray a wide range of emotions including disgust, surprise, sadness, keen interest, calmness and infuriated.
- **2002-** Roomba, the first highly efficient vacuum cleaner. Its introduction marked the turning point of the integration of Artificial Intelligence into general household activities. The design is very user friendly and considering its 99% efficiency against allergens, its efficiency is unquestionable. Later on, it became compatible with various voice assistants making everyday household activities even more convenient.
- **2008-** Siri, Apple's voice assistant software, marked the beginning of the voice assistant AI's. Although the technology was in the beginning highly inaccurate, later on it was improved. This innovation provided a breakthrough in voice bots, voice searches and voice assistants, such as Alexa and Google Home.

- **2011-** The famous quiz show Jeopardy resulted in the development of Watson! Watson is a question-answering computer system capable of answering questions posed in natural language. Watson helps you predict and shape future outcomes, automate complex processes, and optimise your employees' time.
- **2017-** Amper became the first artificially intelligent musician, producer and composer to create and put out an album. Additionally, Amper brings solutions to musicians by helping them express themselves through original music. Amper's technology is built using a combination of music theory and AI innovation.
- **2020-** GPT-3, short for Generative Pre-trained Transformer, was introduced to the world earlier in May 2020. It is based on natural language (NLP), deep learning, and Open AI, enabling it to create sentence patterns, not just human language text. It can also produce text summaries and perhaps even program code automatically.

Possible Solutions

Regulating the usage of AI:
By regulating what percentage of the work is allowed to be done by AI, we can ensure that companies cannot replace the complete or at least the vast majority of the workforce with Artificial Intelligence. Therefore, we can avoid the massive layoff that the irregulated usage of this technology could cause.

Upskilling and/or reskilling the workforce:
By investing in training programmes and education to help workers acquire skills in freshly emerging fields such as robotics, and data-analysis or in areas where human skills like creativity, empathy and critical thinking are essentials. By implementing such measures, the workforce can be prepared for the changing AI-driven economy, therefore reducing the possible job displacements.

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