Forum: Economic and Social Council

Issue: *Minimizing the potentially harmful economic and social impacts of AI development on society*

Student Officer: *Jonathan Wu*

Position: *Deputy Committee Chair*

Introduction

As technology advanced exponentially in the past few decades, artificial intelligence has become one of the pre-eminent fields in computer science research. In recent years, incredible progress has been made in the field of Artificial Intelligence (AI): Siri, IBM's Watson, or Alexa just to name a few. Contemporarily, AI has gone through repeated technological developments and refinements as each device advances in areas of information access, storage, and computation and becomes increasingly integrated into miscellaneous aspects of both private and public spheres. As the world becomes more complex, nations would need to leverage our human resources by implementing high-quality computer systems; in years to come, AI holds great economic, social, security, medical, and environmental promise— from helping people acquire new skills and democratizing services, reduce healthcare inefficiencies, and enhance cybersecurity defenses, to reducing energy usage through quicker iteration cycles and providing real-time environmental monitoring for pollution and air quality.

But before nations can realize this potential, member states would have to address concerns associated with AI development to ensure minimal negative impacts regarding economic and social aspects of society. Currently, artificial narrow intelligence has facilitated basic manufacturing and service tasks in computing and connectivity technologies; however, with increased efficiency and predictability, artificial general intelligence can be much more capable at completely replacing humans in vast numbers of jobs. This may lead to economic productivity but also mass unemployment of unspecialized workers due to automation-related layoffs and, subsequently, widespread poverty and income inequality. Taxation by the government and an assortment of other economic matters also constitute speculative concerns for the future. On the social aspect, machine learning can reinforce human bias within systematic decisions and manipulate public perception. Furthermore, the prevalence of the integration of artificial intelligence into human life can give rise to issues related to crimes and the allocation of responsibility, ethics of autonomous systems, and issues concerning robot rights and personhood.

Internationally, AI also possesses the possibility to influence political powers that can induce changes in which one's citizens live and sustain their lives and livelihood. Ultimately, one factor for consideration is the uncertainty of AI's development; with self-replicative processes and machine learning on a massive scale, the socioeconomic impact of AI on human civilization can expand and shift in unforeseen rates, scopes, and directions.

With so many aspects to consider, keep in mind that ECOSOC's agenda focuses mainly on economic and social aspects and not on nation's cybersecurity or weapons systems such as Lethal Autonomous Weapons Systems (LAWS).

Definition of Key Terms

Artificial Intelligence

Artificial Intelligence (AI), a term first coined in 1956 by John McCarthy, is the broader concept of machines that possess the capability to execute tasks that are characteristic of human intelligence. Such an extensive scope includes abilities such as planning, understanding language, recognizing objects and sounds, learning, and problem-solving. Nevertheless, AI is often put into two categories, general and narrow. General AI would have all of the characteristics of human intelligence, including the capacities mentioned above, while narrow AI exhibits some facets of human intelligence where it excels extraordinary at. However, it is crucial to note that AI is not to be confused with machine learning. At its core, machine learning is simply a method of achieving AI— most notably through algorithms whose performance improve as they are exposed to more data over time.

Machine Learning

Machine learning, as aforementioned, is a method of achieving AI. More specifically, machine learning is the study of algorithms and statistical models that computer systems use to progressively improve their performance on a specific task. Through training data based on mathematical models of sample data, computer systems will be able to make predictions or decisions without being explicitly programmed to perform the task. For example, email filtering is a type of AI that is built upon machine learning. In short, the system will analyze emails that have been marked as spam by transforming said data into mathematical models, generate more data by filtering emails by itself, and improving upon its own data.

Superintelligence

A superintelligence is an intelligence system that rapidly increases its intelligence in a short time, specifically, to surpass the cognitive capability of the average human being. Superintelligence has been used in science fiction, and in discussions around artificial intelligence, to understand some of the ramifications of a quickly evolving intelligence model in IT. Part of the idea of superintelligence is that certain kinds of artificial intelligence work are theoretically capable of triggering a “runaway reaction” where an artificial intelligence far exceeds human capacity for thought and starts to manipulate or control humans in specific ways. Superintelligence is tied to the idea of a “singularity,” which is based on the idea that a catalyst or trigger would cause rapid change beyond what humans can anticipate.

Turing Test

The Turing Test is a test for intelligence in a computer, requiring that a human being should be unable to distinguish the machine from another human being by using the replies to questions put to both. It is named after Alan Turing, an English mathematician who pioneered machine learning during the 1940s and 1950s by cracking the Enigma Code Nazi Germany was using to transmit encrypted code during World War II.

Background Information

Development of artificial intelligence

The emergence of artificial intelligence officially in history dates back to 1956 during a conference session at Dartmouth College regarding artificial intelligence— the first official mention. Marvin Minsky stated in his book "Stormed Search for Artificial Intelligence " that "the problem of artificial intelligence modeling within a generation will be solved ". The first artificial intelligence applications were introduced during this period. These applications are based on logic theorems and chess game. The programs developed during this period were distinguished from the geometric forms used in the intelligence tests; which has led to the idea that intelligent computers can be created.

Milestones for AI History

List Processing Language (LISP) developed by John McCarthy in 1957, functional programming language developed for artificial intelligence. Old and powerful programming languages— allows you to create flexible programs that represent basic operations with list structure. Optimism for the future of AI development swelled throughout the next decade; however, it wasn’t long before the abandonment of connectionism in 1969 occured. The developments on artificial intelligence in this period are too few to be tested. The hasty and

optimistic attitude due to the unrealistic expectations that have emerged has led to the idea that it will be easy to uncover the machines with intelligence. Furthermore, the Defense Advanced Research Projects Agency (then known as “ARPA”, now known as “DARPA”) faced funding cuts. During the 1960s, DARPA provided millions of dollars for AI research with almost no strings attached. This attitude changed after the passage of Mansfield Amendment in 1969, which required DARPA to fund "mission-oriented direct research, rather than basic undirected research". Pure undirected research of the kind that had gone on in the 1960s would no longer be funded by DARPA. Researchers now had to show that their work would soon produce some useful military technology. However, during the period from 1970 to 1975, artificial intelligence gained momentum due to success in AI systems that have been developed on subjects such as disease diagnosis that began to be used in large projects with practical applications in the 1980s. The use of artificial intelligence has reached to a much wider range thanks to more economical software and tools

Rising concerns

Technological Unemployment

A major interest that has perturbed the public in many nations is the concern regarding AI enabling greater workforce automation, potentially resulting in a dramatic impact on many industries and could worsen economic disparities by generating wealth for a smaller number of people than previous technological revolutions. This may result in significant job losses, but will also augment the workflow of many jobs, hence highly debatable.

Ethics

The field of AI ethics is expanding rapidly, with topics of discrimination, fairness, algorithmic bias, and human rights among the primary areas of concern. Algorithms can reproduce and magnify social biases and discrimination from using training data that mirror existing bias in society or that have a skewed representation. Programmers may also unintentionally introduce their own assumptions into their software. Algorithmic bias can result in both harms of allocation and harms of representation. AI ethics also encompasses the issues of value systems and goals encoded into machines, design ethics, and systemic impacts of AI on social, political and economic structures. Some have also called to more explicitly include justice as a goal of fair, accountable, and transparent “FAT” AI development. AI has the potential to have profound social justice implications if it enables divergent access, disparate systemic impacts, or the exasperation of discrimination and inequities.

Political Manipulation and Computational Propaganda

Highly personalized ads have demonstrated the capabilities of AI to easily manipulate the information people can see through geotargeting, behavioral targeting, or socio-psychographic targeting. With face manipulation technologies such as Face2Face, the creation of fake videos will enable improved targeted computational propaganda. Many MEDCs have expressed concerns that key tenets of democracy could be undermined through such proliferation. Nevertheless, keep in mind that this is not to be confused with search engine confirmation bias.

Key Issues

Economic Aspects

As mentioned above in the rising concerns, the general public has expressed immense unease towards the idea of AI taking over many jobs, resulting in high rates of unemployment. However, there are also other aspects to consider— further divergence of wealth distribution in the world. New A.I. technologies might allow imitation or learning of frontier technologies to become automated. That is, machines would figure out in no time how to imitate frontier technologies. Then a main source of divergence might become credit constraints, to the extent that those might prevent poorer countries or regions from acquiring super-intelligent machines whereas developed economies could afford such machines. Thus one could imagine a world in which advanced countries concentrate all their research effort on developing new product lines (i.e. on frontier innovation) whereas poorer countries would devote a positive and increasing fraction of their research labor on learning about the new frontier technologies as they cannot afford the corresponding A.I. devices. Overall, one would expect a increasing degree of divergence worldwide. A second conjecture is that, anticipating the effect of A.I. on the scope and speed of imitation, potential innovators may become reluctant to patent their inventions, fearing that the disclosure of new knowledge in the patent would lead to straight imitation. Trade secrets may then become the norm, instead of patenting. Or alternatively innovations would become like what financial innovations are today, i.e. knowledge creation with huge network effects and with very little scope for patenting, thus completely slowing down economic growth in the near future.

Social Aspects

Nations around the world must lay the groundwork for a code of AI ethics to guide humanity through upcoming breakthroughs and inevitable dilemmas in order to minimize damage on society. For example, ethical challenges will unfold as algorithms are developed that impact how humans and

autonomous vehicles interact. Key decisions will be made by a fusion processor in split seconds, running AI, connecting a car's vast array of sensors. Should these algorithms be transparent? For example, will a car rear-end an abruptly stopped car or swerve and hit a dog on the side of the street? Furthermore, AI will continue to give algorithms significant influence over what we see and read in our daily lives. We have to ask ourselves how much trust we can put in the systems that we're creating and how much power we can give them. Consequently, it is every nation's utmost priority to establish such guidelines and code of conduct in order to protect their citizens to the fullest.

Major Parties Involved and Their Views

United States of America

President Trump's White House has taken a markedly different, free market-oriented approach to AI. In May 2018, the White House invited industry, academia, and government representatives to a summit on AI. In a speech at the conference, Michael Kratsios, Deputy Assistant to the President for Technology Policy, outlined the President's approach to AI. He announced the government has four goals: (1) maintain American leadership in AI, (2) support the American worker, (3) promote public R&D; and (4) remove barriers to innovation. The government will focus on removing regulatory barriers to innovation so that American companies have the flexibility to innovate and grow. Furthermore, the United States of America should develop a computational engagement strategy for defending against online foreign propaganda, and for effectively using attributed computational engagement tools for public diplomacy overseas. The State Department should also develop a toolkit of options— including diplomatic pressure, sanctions for malign actors, export controls, and international laws and norms—designed to reduce the risk to the US public from foreign computational propaganda.

Australia

While a formal AI strategy hasn't been established, multiple proposals have been advocated during the 2018 to 2019 Australian budget. The government has allocated AU$29.9 million to invest in a four-year development in AI. Within it, the Australian government will create a Technology Roadmap, a Standards Framework, and a national AI Ethics Framework to support the responsible development of AI. The investment will also support various initiatives to increase the supply of AI talent in Australia such as the Cooperative Research Centre projects, and PhD scholarships. Furthermore, the government has announced that it will prioritize AI in the government's forthcoming Digital Economy Strategy to address potential economic impacts AI will bring to the labour workforce.

China

China has one of the most comprehensive plans of all national AI strategies, with initiatives and goals for R&D, industrialization, talent development, education and skills acquisition, standard setting and regulations, ethical norms, and security. China's ambition is best understood as a three-step plan: to drive China's AI industry "in-line" with competitors by 2020, to reach "world-leading" in some AI fields by 2025, and to become the "primary" center for AI innovation by 2030. Specifically, China intends to advance upon four major tasks: (1) focus on developing intelligent and networked products such as vehicles, service robots, and identification systems, (2) emphasize the development AI's support system, including intelligent sensors and neural network chips, (3) encourage the development of intelligent manufacturing, and (4) improve the environment for the development of AI by investing in industry training resources, standard testing, and cybersecurity. In addition, China's government has also partnered with national tech companies to develop research and industrial leadership in specific fields of AI.

EU Commission

By adopting the Communication on Artificial Intelligence, a 20-page document that lays out the EU's approach to AI, the EU Commission aims to achieve 3 main criterions: to increase the EU's technological and industrial capacity and AI uptake by the public and private sectors, to prepare Europeans for the socioeconomic changes brought about by AI, and to ensure that an appropriate ethical and legal framework is in place. In 2017, the EU has invested €500 million into AI, and plans to commit and increase their investment to €1.5 billion by the end of 2020. Furthermore, the EU Commission is creating the European AI Alliance to address issues pertaining to AI ethics such as fairness, safety, and transparency.

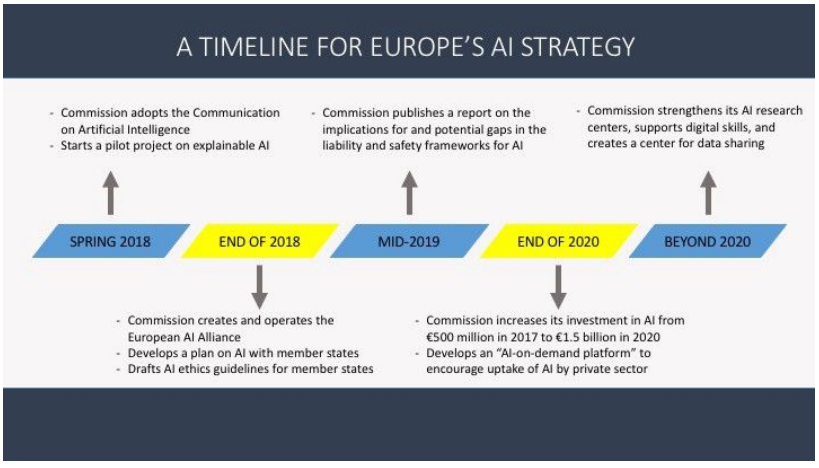

Image 1: An infographic illustrating Europe's AI strategy

India

India has taken a unique approach by focusing on leveraging AI not only for economic growth, but also for social inclusion. The strategy, as a result, aims to enhance and empower Indians with the skills to find quality jobs, invest in research and sectors that can maximize economic growth and social impact, and scale Indian-made AI solutions to the rest of the developing world. At its core, India has expressed their hopes in establishing new Centres of Research Excellence (COREs) that will specifically develop sector oriented guidelines on privacy, security, and ethics.

Timeline of Relevant Resolutions, Treaties and Events

Date	Description of event
	ENIAC
February 15, 1946	The Electronic Numerical Integrator and Computer, the first computer in a room size of 30 tons, was built for the United States Army to calculate artillery firing tables.
	Turing Test
October, 1950	Alan Turing, founder of computer science, first introduced the concept of the Turing Test, where a machine is capable of exhibiting intelligent behaviour equivalent to or indistinguishable from that of a human.
	First AI Program
1951	The first working AI programs were written in 1951 to run on the Ferranti Mark 1 machine of the University of Manchester: a checkers-playing program written by Christopher Strachey and a chess-playing program written by Dietrich Prinz.
	General Problem Solver
1959	The General Problem Solver, or G.P.S. is a computer program created in 1959 by Herbert A. Simon, J.C. Saw, and Allen Newell intended to work as a universal problem solver machine. It would later go on to evolve into the Soar architecture for artificial intelligence.
	Deep Blue Supercomputer
February 10, 1997	Deep Blue named supercomputer defeated world famous chess player Kasparov, proving potential capabilities of artificial intelligence

1998	**First AI Player** Furby, the first artificial intelligence player, was driven to the market
2000	**Kismet** Kismet named robot which can use gesture and mimic movements in communication is introduced
2005	**AI robot** Asimo, the closest robot to artificial intelligence and human ability and skill, is introduced
2018	**Leading UN Platform for AI** The International Telecommunication Union (ITU) organized the event "AI for Good Global Summit" to focus on strategies to ensure trusted, safe, and inclusive development of AI technologies and equitable access to their benefits.

Relevant UN Treaties and Events

- The United Nations Interregional Crime and Justice Research Institute (UNICRI) launched its program on AI and Robotics in 2015
- The 70th Session of the UN General Assembly held the event, "Rising to the Challenges of International Security and the Emergence of Artificial Intelligence" on October, 2015
- In October 2017, the UN led a joint meeting of the UN Economic and Social Council (ECOSOC) and the Second Committee to consider the role and impact of AI on sustainable development
- The International Telecommunication Union (ITU), the United Nations specialized agency for information and communication technologies, has organized the event "AI for Good Global Summit" in 2017 and 2018 to facilitate a platform for dialogue on AI.

Evaluation of Previous Attempts to Resolve the Issue

Being a relatively new and controversial issue, concrete steps in attempt to resolve the issue are limited and simply insufficient. However, many nations have instead, made countless proposals and plans over the past fifteen months outlining strategies to promote the "safe" use and development of AI. No two strategies are alike, with each focusing on different aspects of AI policy: scientific research, talent development, skills and education, public and private sector adoption, ethics and inclusion, standards

and regulations, and data and digital infrastructure. All that is left is for countries to initiate these proposals.

Possible Solutions

As aforementioned, many nations have created proposals regarding safe use and development of AI. Thus, it is highly suggested that delegates to research each of their nation's AI development strategic proposals and begin from there.

Regarding the concern over technological unemployment, a potential solution could be to include redistributive economic policies like universal basic income and the "robot tax" in order to offset some of the likely increases in inequality and resulting social and political tensions. The adoption of similar policies that aim to offset income inequality and reduce subsidies on AI development firms can also discourage production and decrease the rate in which the technology advances, rendering the world additional time for deliberation and decision-making. However, keep in mind that the pursuit of taxing robots disincentivizes companies from utilizing them, leading to a failure to capitalize on increases in productivity that can stimulate the economy. Thus, it is of utmost importance that all aspects are to be considered whilst using this particular solution.

Governments, on the other hand, can mitigate the effects of unemployment through providing educational tuition grants for certain degrees and increase the accessibility of specific vocational programmes that address the additional jobs arising from the need to manage the presence of AI workers within firms. In this scenario, replaced staff will be freed from routine activities in order to supplement of productivity of AI through creative and critical thinking related tasks or administrative works — problem-solving, creating novel products and services, customer engagement, and pursuing new markets. Consequently, the creation of additional jobs will offset the layoff of unspecialized workers as those who become unemployed can be allocated towards newly assigned positions,

In the end, if circumstances cannot be controlled and economic inequality and social controversies have spiralled out of containment, governments can prohibit the private production and development of AI. Initially, AI can be utilised for public goods and services that benefit social utility as a whole and increase total welfare of the population. After ensuring that the economic stability returns to adequate levels, governments can create specific licences that allow private firms to again capitalize on the technology under periodical supervision.

Bibliography

Aghion, P., Jones, B., & Jones, C. (2017). Artificial Intelligence and Economic Growth. doi:10.3386/w23928

AI Policy Challenges and Recommendations. (n.d.). Retrieved December 12, 2018, from <https://futureoflife.org/ai-policy-challenges-and-recommendations/?cn-reloaded=1>

Dutton, T. (2018, June 28). An Overview of National AI Strategies – Politics AI – Medium. Retrieved December 15, 2018, from <https://medium.com/politics-ai/an-overview-of-national-ai-strategies-2a70ec6edfd>

Flasiński, M. (2016). History of Artificial Intelligence. *Introduction to Artificial Intelligence,*3-13. doi:10.1007/978-3-319-40022-8_1

Frontier Issues: Artificial intelligence and other technologies will define the future of jobs and incomes | Economic Analysis & Policy Division. (n.d.). Retrieved December 15, 2018, from <https://www.un.org/development/desa/dpad/publication/frontier-issues-artificial-intelligence-and-other-technologies-will-define-the-future-of-jobs-and-incomes/>

Howe, J. (November 1994). "Artificial Intelligence at Edinburgh University : a Perspective". Archived from the original on 17 August 2007. Retrieved 15 December 2018. Retrieved from

<http://www.dai.ed.ac.uk/AI_at_Edinburgh_perspective.html>

McClelland, C. (2017, December 04). The Difference Between Artificial Intelligence, Machine Learning, and Deep Learning. Retrieved from

<https://medium.com/iotforall/the-difference-between-artificial-intelligence-machine-learning-and-deep-learning-3aa67bff5991>

NRC (1999). "Developments in Artificial Intelligence". *Funding a Revolution: Government Support for Computing Research*. National Academy Press. Archived from the original on 12 January 2008. Retrieved 15 December 2018. Retrieved from

<https://web.archive.org/web/20080112001018/http://www.nap.edu/readingroom/books/far/ch9.html>

Sysiak, P. (2016, July 27). AI Revolution 101 – AI Revolution – Medium. Retrieved December 11, 2018, from https://medium.com/ai-revolution/ai-revolution-101-8dce1d9cb62d

The White House Office of Science and Technology Policy. (2018). Summary of the 2018 White House Summit on Artificial Intelligence for American Industry. Retrieved from

<https://www.whitehouse.gov/wp-content/uploads/2018/05/Summary-Report-of-White-House-AI-Summit.pdf>