

# CSTD

## B: Surveillance towards the development of artificial intelligence

### INTRODUCTION

The Commission on Science and Technology for Development (CSTD) is a subsidiary body of the Economic and Social Council (ECOSOC). It was established in 1992, as a result of the restructuring and revitalisation of the United Nations in the economic, social and other related fields. CSTD met for the first time in April 1993 in New York, USA. Since July, 1993, the United Nations Conference on Trade and Development (UNCTAD) secretariat has been responsible for the substantive servicing of CSTD. It has subsequently met in Geneva, Switzerland. It was established to provide the General Assembly and ECOSOC with high-level advice on relevant issues through analysis and appropriate policy recommendations or options; in order to enable those organs to guide the future work of the United Nations and develop common policies and agree on appropriate

actions.

Artificial Intelligence (AI) is a branch of science with the purpose of studying the capability of machines and computers, not only to act and think independently; but to analyze, interpret and adapt just as a human being would do. It must be highlighted the fact that these actions, as well as choice making, "require a human level of expertise" (Shubhendu and Vijay, 2013). Artificial Intelligence has moved on to being now one of the areas receiving special attention from governments and scientifics, as its development is able to bring both benefits and drawbacks to global population.

Given the wide range of fields of AI application and research, outcomes can result on being either positive or negative. Such include illnesses treatment or self-driving cars, to unemployment and human rights violation. Therefore, the international community has created supervisory organisms and coalitions with the aim to scrutinize AI's effects. This is

done with the purpose of avoiding individual or collective damages and, instead, establish rules that supervise the proper development of AI from economic,

legal, financial and philosophical perspectives. Some associations that are fighting for creating awareness about AI and offer an open discussion about AI's influence on society are Partnership on AI, MIRI Institute, Open AI, the Cambridge Center for Study of Existential Risk, among others.

It ought to be mentioned that by 2014, about 245 million surveillance cameras were globally installed, being China, the United Kingdom, the US, Russia, Taiwan, Malaysia, Thailand and Singapore some of the most surveilled countries in the world. By the same token, some estimations for the existing number of AI devices made by the BCC in 2017 revealed that there are: 13927 autonomous robots, 8075 virtual assistants, 4685 neurocomputers, 2095 embedded systems, and 12433 expert systems (such as those used to make medical decisions).

Surveillance towards development and use of AI is due to the statements claiming the inappropriate use of it. This is an issue that goes back to World War II, when advances in technology, secretly carried out, (atomic bombs, submarines, rockets, nuclear arms) resulted on causing damage to citizens in different

countries. Furthermore, treaties such as the British-US Communication Intelligence Agreement- BRUSA- (currently known as United Kingdom-United States Security Agreement: UKUSA) were signed; "creating international surveillance alliances in order to collect and share mass surveillance data" (Sven Taylor, 2019).

This agreement refers to the allowed exchange of information such as "intercepting, decoding and translating foreign communications" (Norton-Taylor, 2010). Such agreement has been updated throughout the previous and current centuries and countries such as Canada, Australia and New Zealand have been included. Such nations later created an alliance, called the Five Eyes (FYEVE). Together, they gather information about Artificial Intelligence and Machine Learning, in order to be used for global surveillance.

China, for instance, is one of the most involved nations within this topic, not only for being the biggest AI investor (12 billion dollars in 2017) but also on the grounds of its colossal surveillance cameras network and severe policies. "China has built its self-proclaimed 'world's biggest camera surveillance system.' The 170 million CCTV cameras use artificial intelligence and

facial recognition technologies to get an inside look at everything about its citizens. (Lewi, n.d.)

Notwithstanding, Japan develops similar strategies or devices occasionally, it is not as criticized as China, for it not having such a large surveillance network. Japan counts with 11 700 AI research papers published. "On the tech front, Japan is considered the leader in the field of robotics, but perhaps a lesser known fact is that they were the second nation after Canada to adopt a national AI strategy The strategy focuses primarily on AI applications for productivity, health, and mobility" (Nanalyze, 2019).

Whereas the US is also one of the leading AI research countries, just behind China (with 10 billion dollars invested). It does not applicate its AI advances in the same way. Although, there are failures on its devices and algorithms, which have proved to be discriminatory, not to mention its quite large mass surveillance network. In the same way, Israel is blamed for developing softwares, which, were they incorrectly handled, could lead to a scandalous human right violation.

The UK is also one of the most important states on the

matter of AI. It invests up to 380 millions and 10 100 research papers published. The British possess one of the largest mass surveillance networks in the world, being London the second city with more extensive networks of it, following only Beijing.

Being Berlin the fourth largest startup AI companies city, Germany is a distinguished AI leader. Germany receives about 1.5 million dollars for AI through foreign investments, and has 8 000 published research papers between 2011 and 2015. Other distinguished AI leaders are France and Canada. France is expected to invest 665 million Euros by 2022 on AI, turning itself as an European leader in such industry. Meanwhile, Canada has invested more than 1.3 billion in a span of 1 year for AI and being the nations with cities that possess the highest concentration of researches and AI startups at an international level.

#### HISTORICAL BACKGROUND

During the first half of the XXth century, science fiction started to familiarize the world with ideas about AI. For example, the "heartless" Tin man from the Wizard of Oz or the humanoid robot presented in the 1927 movie,

“Metropolis”.

In 1946, the Electronic Numerical Integrator was presented to the world and media through a press conference. Journalists of the time, described the machine as an “electronic brain” or a “mathematical Frankenstein”. This generated a big hype around the machine. So much, that the British physicist, DR Hartree published an article in order to explain it’s actual and specific functioning.

By 1950, the new generation of mathematicians, scientists and philosophers already had the concept of artificial intelligence on their minds. During 1950, Alan Turing brought out the idea that computer programs could be, one day, capable of thinking like the human mind. He developed the “Turing Test” with the purpose of testing a computer’s behaviour and its relation with “human behaviour”. In 1956, John McCarthy, American scientist, established the term “artificial intelligence”. One year later, Frank Rosenblatt designed the first ever neural network in computers, mimicking how the brain processes thoughts.

An example of this was Alan Turing, a young British

polymath. He actually explored the mathematical possibility for AI. He suggested that we as humans should use the reason as well as the information we have available in order to make decisions and solve problems that concern humanity. This idea became the logical framework in his 1950’s paper, named “Computing Machinery and Intelligence”, in which he discussed how to build intelligent machines and the way humans can test their intelligence.

However, Turing couldn’t actually get to work in this field properly. The computers of 1949 were lacking a key prerequisite for achieving intelligence. Computers were just able to execute commands, but they couldn’t store them. In other words, computers were able to execute what someone tell them to do but they will not remember what they did. Another problem was that back in the 1950’s, computers were extremely expensive. The cost of one computer could ran to \$200,000 a month. Only prestigious universities and leading technology companies could afford to use computers daily.

Five years later, Allan Newell, Cliff Shaw, and Herbert Simon’s initialized the proof of concept through

their program called "Logic Theorist". The program was designed to imitate the human problem-solving skills. It was founded by Research and Development Corporation (RAND). It is considered to be the first artificial intelligence program and it was presented at the DSRPAI (Dartmouth Summer Research Project on Artificial Intelligence) in 1956. In this historic conference, John McCarthy, brought together many top researchers from diverse countries in order to open a discussion on artificial intelligence. Unfortunately,

the conference didn't fulfill McCarthy's expectations; there was a failure in order to agree about the standard methods for the development of the field or AI.

Later in 1958, Frank Rosenblatt, presented the "Perceptron". It was rudimentary machine-learning algorithm. Even though this machine could only be trained to recognize a few patterns, the New York Times called it an "electronic brain" and claimed it will be able to "walk, talk, see, reproduce and be completely conscious of its own existence."

An important flourishing for artificial intelligence was between 1957 and 1974. Computers started to be

able to store more information, they became faster, cheaper and more accessible. The ability of machines to learn algorithms also improved. In 1958, the United State's Department of Defense created the Advanced Research Projects Agency (later known as DARPA), with the purpose of researching and developing military and industrial strategies related to upcoming technologies.

Some demonstrations such as the Newell and Simon's "General Problem Solver" and Joseph Weizenbaum "ELIZA" showed a promise toward the problem solving through AI. This, among other projects, and its success, convinced government agencies such as the Defense Advanced Research Projects Agency (DARPA) to fund several institutions for AI research. However, reaching the initial fog of artificial intelligence had many obstacles. The biggest one was the lack of computational powers to do anything substantial. Computers couldn't store enough information or process it as fast as required.

From 1959-1962, Arthur Samuel, IBM computer scientists, established the term of "machine learning". Samuel is considered as a pioneer in the areas of computer gaming and AI. He is mostly known for

developing the first ever self-learning program, being a game of checkers.

Later in 1959, Marvin Minsky, and American cognitive scientist, cofound the Massachusetts Institute of Technology's artificial intelligence laboratory. He was one of the main leader thinkers in the field of AI between the 1960's and 1970's. He also advised the American film director Stanley Kubrick on the production of "2001: A space Odyssey" a film released in 1968, which gave people and the world in general, one of the best representations of AI.

During the 1960s, the U.S. Department of Defense started to train computers so that

they can simulate basic human reasoning. From 1966-1972, Shakey the Robot was the first machine to ever acquire artificial intelligence. This meant that they could "perceive its

surroundings, logically deduce implicit facts, navigate, make a plan to achieve a goal, monitor the execution of a plan in the real world, recover from errors in plan execution, improve its planning abilities through

learning, and communicate in simple English" (Military Embedded Systems, n.d.).

During the 1970s-1980s, researchers created advanced systems related to biology, medicine, engineering, and the military. Later on, in 1979, Hans Moravec created the Stanford Cart. It is "the first computer-controlled autonomous vehicle after circumnavigating a chair-filled room at the Stanford AI Lab"(Military Embedded Systems, n.d.).

In the 1980's AI research field expanded through more funds and algorithmic tools. The American scientist, John Hopfield, and American psychologist, David Rumelhart, made "deep learning techniques" popular. Such techniques allowed computers to learn by using experience. Nevertheless, American computer scientist, Edward Feigenbaum, designed and introduced expert computer systems. Their objective was to achieve the mimicked decision-making process of a human expert.

Through the 1990s, machine work had a significant turn. Its machine learning evolved from possessing a knowledge-driven approach into a data-driven approach. Computers began to analyze data, draw

conclusions and learn from the results. In 1997, a huge advance on AI occurred. Supercomputer called Deep Blue defeated Garry Kasparov, world chess champion, in a chess game. (Military Embedded Systems, n.d.)

In 2000, machine learning arrived to software services and mobile devices. "Intuitive Surgical's da Vinci becomes the first robotic-assisted surgical system to gain approval by the

U.S. Food & Drug Administration for general laparoscopic surgery. The tool has since been used for more than 3 million minimally invasive procedures" (Military Embedded Systems, n.d.). It wasn't until 2005, that the first autonomous vehicle drove 132-miles; 4 years later, in 2009, Google built a self-driving car, being a major AI advance.

Until the XXI century, many landmarked goals for the development of AI were actually achieved. However, during the actual XXI century, there have been famous scientists, technology and businessmen, who had expressed their concern towards AI.

For example, South African investor and physicist,

Elon Musk and the British scientist Stephen Hawking . Between 2010 and 2014, both physicists openly shared their opinion with the media. In 2014, Elon Musk described AI as "our biggest existential threat".

In the same year Stephen Hawking told the BBC that "the development of full artificial intelligence could spell the end of the human race".

Some programmers, mainly from the MIT Media Lab in Cambridge Massachusetts, have been determined to prove artificial intelligence could be terrifying. Kilian Weinberger, associate professor in the Department of Computer Science at Cornell University, told Live Science (n.d.), that human negative feelings about AI can be divided in two branches: the idea that artificial intelligence will achieve the enough conscience and seek to destroy humans, and the fear for immoral people to use it for evil purposes. According to Weinberger himself (n.d.), these are the reasons why AI operates under so many specific limitations and algorithms that are able to dictate its behavior .

CURRENT RELEVANCE

More advances and investments have been made on AI. Such have reached a peak on which there are even minor claims stating that the countries' competence on AI is the "new space race". AI has provided uncountable devices and improvements in every single field. AI could, for example, make diseases diagnose easier and more accurate, so as to strengthen the bond between doctor and patient. It is also used in the study of nuclear fusion power, in order to produce energy or to develop self-driving cars, virtual assistants and several mobile devices tools. In astronomy studies AI is frequently used as well.

On the other hand, Artificial Intelligence has allowed governments and institutions to take advantage of its possibilities and disrespect basic human rights (specifically the twelfth article on the UN declaration of human rights- which talks about the right to privacy- and occasionally the eighteenth and nineteenth articles as well, where the rights to freedom of thought, expression and opinion are explained).

In the US, for instance, the penal system has been accused to be discriminatory, as it is impartial and affects negatively the Afro-American population.

ProPublica journalists on 2016 disclosed this. While carrying out an investigation, the police department is in charge of interrogating involved parties, for their answers to be introduced into an algorithm called Compas, which is in charge of predicting how likely is someone to commit a crime. This data is later on delivered to judges in charge of that case, with the purpose to help them when

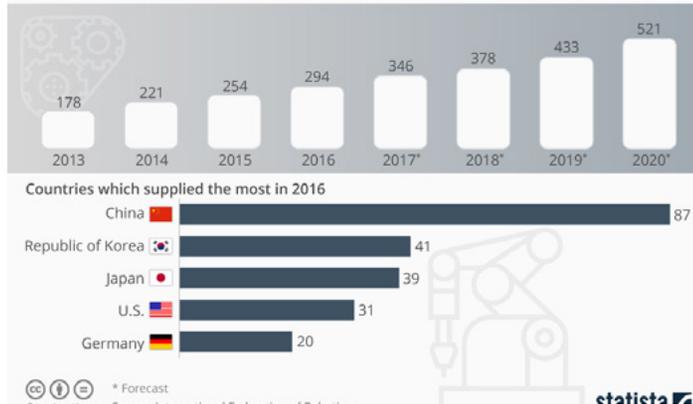
determining a sentence. There is an irregularity on this software: afro-american suspects always get higher punctuation, as well as higher sentences.

In December of 2013, the United Nations General Assembly adopted resolution 68/167. Such document expresses a deep concern on the impact that surveillance and the interception of communications may have on human rights; mainly on the human right for privacy. The General Assembly affirmed that the rights of people that were offline should be as protected as when they are online.

In 2014, the U.S. Department of Defense announced the Third Offset Strategy, with the purpose of representing the idea that the rapid development of AI will shape

### Rise of the Industrial Robots

Estimated and forecast supply of industrial robots worldwide 2013–2020 (in thousand units)



future warfare. In 2015, “Steven Hawking, Elon Musk, and Steve Wozniak, and 3,000 researchers in AI and robotics wrote an open letter calling for a ban of the development of autonomous weapons” (Military Embedded Systems, n.d.). In response to this, the UK opposed banning lethal autonomous weapons, and proposed that such armament should be under surveillance and control of humans.

In 2016, AI made a huge advancement on the field of medicine; it detected and diagnosed cancer at a better rate than human doctors. One year later, in 2017, AI had a major debut on the scientific field, where it assists in discovering new particles and phenomena. In 2017, “at the United Nations’ Convention on Conventional Weapons, after a discussion of a potential ban on ‘killer robots,’ twenty-two countries call for an outright ban on lethal automated weapons”(Military Embedded Systems, n.d.). Harvard’s Belfer Center also called out for the attention on AI, since it predicts that AI can “be as transformative as nuclear weapons”.

Russia’s President, Vladimir Putin (2017) stated that “whoever reaches a breakthrough in developing AI will dominate the world”. It has also been revealed that the

Russian military counts with a so-called “robot army” armed with guns. In response to this, in 2018, Google pledge for the international community to prohibit the development of AI weapons.

Privacy and artificial intelligence has always been a matter of public concern. According to Forbes, 2019, “About 9 in 10 American internet users say they are concerned about the privacy and security of their personal information online, and 67% are now advocating for strict national privacy laws”. Nowadays, it has brought the attention the fact that in order for artificial intelligence to evolve, it needs data from consumers, so, how can

privacy be protected from AI? Throughout the years, the concept of privacy, as well as privacy rights, has become complex and people doubt about it. According to the Dictionary, n.d., something private is defined as “only for one person or group and not for everyone”.

There have been various action taken by the international community regarding AI and its development. The General Assembly called on all Member States to respect and protect the right to

privacy in digital communication, in order to ensure the full and effective implementation of technologies such as AI. The International Covenant on Civil and Political Rights, states that no one shall be subjected to arbitrary or unlawful interference with his or her privacy, family, home or correspondence, nor to unlawful attacks on his or her honour and reputation.

#### INTERNATIONAL ACTIONS

founded.

In order to surveil and control the AI development, several organizations have been

The Machine Intelligence Research Institute (MIRI): It is a research nonprofit

institute located in California, US. Its aim is to improve the quality and a safety use of AI systems by developing formal tools for their design and analysis. Moreover, is interested as well on evaluating the negative outcomes AI may bring and give or study possible solutions for them.

Open AI: It is a nonprofit organization in San Francisco, California. Open AI is concerned on ensuring that "artificial general intelligence benefits all humanity" (as mentioned on its official website). This is done through the research and creation of AI programs or devices which are considered to be beneficial, according to their own OpenAI Charter, a document portraying the OpenAI's principles and strategies.

Partnership on AI: It is a coalition between Amazon, Facebook, Google, IBM and Microsoft. Its objective is to promote correct practices within the AI development, the proper population's comprehension of AI and standards for companies to follow. Partnership on AI has acknowledged its intention to work hand by hand with several policy and ethics scholars in order to "conduct research, recommend best practices, and publish research under an open

license in areas such as ethics, fairness and inclusivity; transparency, privacy, and interoperability; collaboration between people and AI systems; and the trustworthiness, reliability and robustness of the technology" (Hern, 2016).

Not only have non-governmental companies and organizations become aware of the importance of AI regulations, but governments too. The UK revealed on 2018 its "AI Code", that it was seeking to guarantee the AI handling in human beings' benefit and forbidding a person's harming and misleading through AI. It acknowledged the intention to invest a larger amount of money in the disclosure of AI negative effects (such as the unemployment caused by automation), and the protection of civilians' data from multinational and technological companies. It is also focused on encouraging education among children so their learning and preparation involves a favourable use of AI.

The European Union published on 2018 its first draft of ethical principles for a trustworthy AI, which highlights the importance of privacy and transparency respect. There is not a clear final agreement yet, although it has been mentioned that it must be able to resume it on five characteristics: to benefit, not commit any harm, respect for human rights autonomy, equitable and make possible for procedures and actions to be precisely explained. This has been done since nations are engrossing on the AI development.

France: It directed 1.8 billion Euros on AI research, according to French President, Emmanuel Macron. This in an attempt to have a more important role on the matter of AI (and to stop its huge brain drain) with a strategy focused on education and developed by the Fields Medal Winner, Cédric Villani.

Canada: Quebec's government disclosed on 2017 its plans to spend 125 million dollars on AI research, specifically, on the Pan-Canadian Artificial Intelligence Strategy, by which it is made an attempt to attract and retain AI researchers. Canada hosts one of the largest AI ecosystems due to the effort made by the Canadian Institute for Advanced Research (CIFAR).

Russia: Devotes 12.5 million dollars annually to AI, a small figure compared to those of US and China- the current leaders on AI. Unlike these countries, Russia earmarks this money especially to military and artillery. Even though, "AI is the future, not only for Russia, but for the humankind. (...). Whoever, becomes the leader in this sphere will become the ruler of the world" (Putin, 2017)

South Korea: It is willing to acquire an outstanding role

in AI worldwide. The government administration plans to build six AI schools for 5000 students by 2020 and to invest nationally on AI. It is planning to build an effective and strong AI ecosystem. South Korea has revealed that it plans to “invest 2.2 trillion won (\$2 billion) by 2020 developing core artificial intelligence (AI) technology over five years with the aim of becoming a global powerhouse in the sector” (Sarmah, 2019).

#### UN ACTIONS

Individuals around the world have been enabled to use the new ITC'S (Information and Communications Technologies) to improve their lives mainly, due to the rapid pace of technological development. Alongside with this, technology has been improving the capacity of many companies; governments like the ones of China, USA or Russia; and individuals to carry out activities of surveillance, data collection and interception. Such actions, in the latest years, have developed a sense of international concern since it can violate human rights, specially the right of privacy.

Considering this, the United Nation General Assembly adopted resolution 68/167 in December 2013. In it,

there was expressed the concern about the negative impact that the surveillance and interception of communications have had on human rights. The General Assembly called on all Member States in order to review how their procedures, practices and legislations related to communications surveillance are operating. Emphasizing the need for Member States to guarantee an effective and full implementation of their duties, always under the international human rights law.

Three years later, the UN General Assembly's Third Committee, adopted a new resolution on the right of privacy in the digital age on November 21st of 2016. This resolution recognizes the collection, processing and sharing of each time more and more personal data, which commonly occurs without the individual's consent. The resolution calls for the fortifying of the prevention and protection against such actions, and calls Member States for developing new and efficient solutions, actions and preventive measures.

CSTD developed targeted recommendations for UN bodies and national policymakers. Such include calling for the need for technology assessment and foresight mechanisms, broadening the policy framework for

science, technology, and innovation, and exploring new innovative financing models.

At the 2018-2019 Inter-sessional Panel Meeting of CSTD, the committee informed that the two draft resolutions that were proposed to the Economical and Social Council (ECOSOC) on the twenty first session , were adopted. One on "Science, Technology, and Innovation for Development," and one on "Assessment of the Progress made in the Implementation of and follow-up to the Outcomes of the World Summit on the Information Society" (WSIS). (CSTD, 2019)

#### POINTS TO DISCUSS

##### Surveillance

Is there any measure that surveills the development of AI?

Privacy abuse on data.

What is the government doing about surveillance?

Consequences of the increasing technology and AI

research.

##### Statistics

Which countries have high percentage of artificial intelligence?

Countries with major investment on artificial intelligence.

Money invested on the research of technological advances.

AI impact on modern society

Artificial Intelligence Development

AI on developing countries.

Development of artificial intelligence.

Benefits of artificial intelligence.

Introduction of daily things replaced by AI.

Control

Balance on AI surveillance around the world.

Rational thinking forms of artificial intelligence.

Negative use and impact on Artificial Intelligence

Social impact

How is AI viewed from a human point?

Is there any case of AI involved problem with humans?

Why do we invest?

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