



PacificMUN 2017

United Nations
Commission on Science
and Technology
for Development
(UNCSTD)
Backgrounder Guide
Topic B: Artificial Intelligence



PacificMUN 2017

Dare to Speak | February 24-26 2017

Bryan Buraga
Secretary-General

Christopher Yuen
Deputy Secretary-General External

Timothy Ro
Deputy Secretary-General Internal

Alice Li
Chief of Staff

Elizabeth Vaz
Under Secretary-General of
Delegate Affairs

Charles Balcita
Under Secretary-General of
Committees 1

Alan Milligan
Under Secretary-General of
Committees 2

Saad Yasin
Under Secretary-General of
Conference

Jonathan Kim
Under Secretary-General of Finance

Shakil Jessa
Under Secretary-General of
Sponsorship

Andy Wang
Under Secretary-General of
Information Technology

Mingxin Gong
Under Secretary-General of
Design and Media

Dear Delegates,

It is with pleasure and elation that I welcome you to the United Nations Commission on Science and Technology for Development (UNCSTD) at PacificMUN 2017. My name is Edward Luo and I will be serving as your Director for this committee. I am currently a Grade 12 student attending Fraser Heights Secondary School. Model UN conferences are known for continually providing engaging, enlightening, and inspiring experiences and I am excited to guide delegates to have the same memorable experience at PacificMUN 2017.

Model UN is an authentic simulation of the United Nations. Prior to arriving at the conference, delegates should have carried out thorough and helpful research. In addition, delegates should think critically and respond spontaneously during the conference. As intimidating as this may sound, I am confident that the UNCSTD will be an exciting and fruitful experience for all delegates regardless of skill or background.

With that said, I present the two topics we will be discussing: Human Cloning and Artificial Intelligence. Human Cloning has sparked great controversies in the past and remains to be a dilemma of ethical concerns, moral values, and scientific advancement. In recent years, many industries saw the merit of artificial intelligence while others are concerned the AI will spell the end of humanity.

The following pages will provide you with a detailed understanding of both topics. Keep in mind that a comprehensive grasp of the topic is as equally important as a clear understanding of your country's stance and foreign policies. If you may need any assistance leading up, during, or after the conference, I will be more than delighted to help you via e-mail. Once again I extend my warmest welcome to all of you and I look forward to reviewing your position papers and working with all of you in February at PacificMUN 2017.

Best regards,

Edward Luo
Director, UNCSTD



PacificMUN 2017

Committee Overview

The United Nations Commission on Science and Technology for Development (UNCSTD) is a subsidiary body of the Economic and Social Council (ECOSOC) established in 1992 to enable the General Assembly and the ECOSOC to guide the future work of the United Nations, develop common policies, and agree on appropriate actions. The commission fulfills its mission through providing those bodies with high-level advice on relevant issues through analysis and appropriate policy recommendations or options in the field of science and technology.¹ Furthermore, the commission acts as a forum for its members to exam science and technology questions and their implications for development, to advance in their understanding on science and technology policies, and to formulate recommendations and guidelines on science and technology matters within the United Nations System.

¹ <http://unctad.org/en/Pages/CSTD/CSTD-Mandate.aspx>



It is easy to consider artificial intelligence (AI) to be a science fiction concept. Numerous novels published and Hollywood films released in the past depict artificial intelligence entities as threats to humanity. However, the majority of stories that feature an AI as the antagonist still result in humans managing to defeat AI with willpower. As a result, many people do not recognize the presence of AI around them and do not fully understand what Artificial Intelligence is.

To comprehensively understand what AI is, it is important to rid the concept of robots. Robots are merely vessels for AI. AI is the science and engineering of creating intelligent machines, especially computer programs. Intelligence is a general mental capability that involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience.²

With that said, AI is all around us. Whenever a search engine provides users with suggestions, it uses the AI programmed within it. This type of AI is known as Artificial Narrow Intelligence (ANI). Sometimes referred to as Weak AI, ANI specializes in this one area.³ An ANI does not store or analyze data pertaining to areas it was not programmed for. Although this type of AI may not sound very impressive, there have already been numerous applications of ANI and some are worried that it will lead humans to a revolution. ANIs are helping doctors diagnose in the medical sector, replacing low-skilled workers in manufacturing and service industries, and being integrated into lethal robots in military.

Though some believe that ANIs could lead to certain social, economic, and political problems, they are not the most concerning type of artificial intelligence. Scientists and experts from other fields are more worried about Artificial General Intelligence (AGI) and Artificial Super-Intelligence (ASI). AGI refers to a computer that is as smart as a human in every aspect. The machine can perform any intellectual task a human being can. ASI, on the other hand, is an intellect that is much smarter and more capable than the best human brain in practically every field.⁴ Although both AGI and ASI are only theoretical for now, many experts believe that they are only a few decades away from becoming reality. According to Ray Kurzweil's Law of Accelerating Returns, a theory which claims that technological advancements progresses on an exponential scale, AI may outsmart humans in as early as 2045⁵.

The prospect of that concerns many professionals, such as Stephen Hawking, Bill Gates, and Elon Musk. All three experts have spoken at professional occasions on the subject of ASI. They seem to agree that, without proper precautionary measures, artificial super-intelligence will spell the end of humanity.⁶ As a matter of fact, many individuals, non-governmental organizations, companies, and states have started to address this potential threat and to seek answers to the question of where will humanity find its place in the age where AI are more intelligent than humans.⁷

² <http://alternativemindsets.co.uk/different-types-artificial-intelligence/>

³ Ibid.

⁴ Ibid.

⁵ <http://singularityhub.com/2016/06/09/ray-kurzweils-four-big-insights-for-predicting-the-future/>

⁶ <http://www.independent.co.uk/news/science/stephen-hawking-pollution-stupidity-artifical-intelligence-warfare-biggest-threats-mankind-a7106916.html>

⁷ <http://alternativemindsets.co.uk/different-types-artificial-intelligence/>



4th century B.C.	Aristotle invented the theory of syllogism, the first formal deduction logic system. ⁸
1206	Al-Jazari, an Arabic engineering genius, designed the world's first programmable automaton, a boat carrying four mechanical musicians powered by water flow. ⁹
1642	Blaise Pascal invented and built the first digital calculator.
1673	Gottfried Wilhelm von Leibniz expanded on Pascal's idea and designed and built a calculating machine called the Step Reckoner.
1739	Jacques de Vaucanson produced "the Duck", a mechanical beast that could flap its wings, eat, and digest grains.
1801	Jacques Marie Jacquard invented a programmable power loom.
1832	Charles Babbage designed the Analytical Engine, a programmable calculating machine.
1910	Alfred North Whitehead and Bertrand Russell published the <i>Principia Mathematica</i> , devoted to show that mathematics can be reduced to logic. ¹⁰
1936	Alan Turing proposed the universal Turing machine.
1950	Isaac Asimov proposed the three laws of Robotics.
1950	Alan Turing introduced the Turing Test in his paper <i>Computing Machinery and Intelligence</i> .
1956	The term "artificial intelligence" was coined at the Dartmouth Conference by John McCarthy. ¹¹
Late 1970s - Early 1980s	Funding and research on artificial intelligence stalled in this period, which later became known as "the first AI Winter".
1968	The book <i>2001: A Space Odyssey</i> was published and features an unemotional killer, HAL 9000 computer.
1984	The first <i>Terminator</i> film was released. Its storyline revolves around the conflict between humans and machines led by AI system Skynet.

⁸ <http://aitopics.org/misc/brief-history>

⁹ Ibid.

¹⁰ Ibid.

¹¹ <http://aitopics.org/misc/brief-history>



1997	Deep Blue computer, developed by the International Business Machines Corporation (IBM), beats reigning world chess champion Garry Kasparov.
2005	Team from Stanford University won the DARPA Challenge, driving 11.78 km autonomously across the desert in just under seven minutes. ¹²
2005	Ray Kurzweil predicts an event he calls the Singularity will occur at 2045, when artificial intelligence surpasses humans as the smartest and most capable life form on Earth. ¹³
2011	IBM's Watson computer wins "Jeopardy!"
October 14, 2011	Apple introduces intelligent personal assistant Siri as a part of iOS 5 and a feature on the iPhone 4S.
2014	A chatbot named "Eugene" passed the Turing Test by convincing 33% of human judges that it was a human. However, the legitimacy of the claim is questionable.
2015	Elon Musk, Founder of Tesla Motors and SpaceX, made a statement that people may be outlawed to drive in the future when self-driving cars become a much safer option. ¹⁴
March 2016	AlphaGo, a computer program developed by Google's Deepmind subsidiary, won 4-1 against second-highest ranking professional Go player Lee Sedol.
May 8, 2016	Tesla driver dies in an accident while using the autopilot mode.
July 2016	Dallas police became the first to use robot lethally for law enforcement, raising concerns about the future of policing. ¹⁵
July 2016	Pensiamo is formed to help hospitals improve supply chain performance with the help of IBM Watson Health technologies. ¹⁶
August 2016	Uber partners with Volvo and begins testing a fleet of self-driving cars in downtown Pittsburgh. ¹⁷

¹² <http://www.livescience.com/47544-history-of-a-i-artificial-intelligence-infographic.html>

¹³ <http://singularityhub.com/2016/06/09/ray-kurzweils-four-big-insights-for-predicting-the-future/>

¹⁴ <https://www.washingtonpost.com/news/the-switch/wp/2015/03/18/elon-musk-human-driven-cars-may-be-outlawed-because-theyre-too-dangerous/>

¹⁵ <http://www.cnn.com/2016/07/12/us/dallas-police-robot-c4-explosives/>

¹⁶ <http://phys.org/news/2016-07-artificial-intelligence-machine-health-chain.html>

¹⁷ <http://www.bloomberg.com/news/features/2016-08-18/uber-s-first-self-driving-fleet-arrives-in-pittsburgh-this-month-is06r7on>



Humans have fantasized of inanimate objects coming to life as intelligent beings ever since the time of ancient Greeks. In Greek myths, Hephaestus, the blacksmith of Olympus, created lifelike metal automata. Though the walking lion created by Leonardo Da Vinci is probably the most well-known automata, the first programmable automaton was created long before in 1206. Al-Jazari, an Arab inventor and mechanical engineer hailed as the “father of modern day engineering” and the “father of robotics”, created a boat carrying four musicians powered by water flow.¹⁸ Scholars believe that Al-Jazari could, at the very least, fine tune the rhythm of the musicians. In 1801, Jacques Marie created the famous power loom that could be programmed to weave different patterns depending on the instructions on punched cards. (Some other inventors also borrowed his idea of programming the machine with punched cards and this particular idea will be discussed later on in this guide.)

It is no doubt that these inventions are meritorious, but they are fundamentally different from what we perceive as artificial intelligence nowadays. The idea of artificial intelligence is intertwined with robots, the vessel of artificial intelligence, and computers, the more broadly defined machine which harbours artificial intelligence. Moreover, it is impossible to discuss the history of computers without discussing how the logic and the math which make up Artificial Intelligence evolved. The first step in developing logic systems was made in the 4th century when Aristotle invented the theory of syllogism, the first formal reasoning system. His logic revolved around deduction and had an unparalleled influence on the history of Western thoughts.¹⁹ In the mid-17th century, Blaise Pascal, France’s most celebrated mathematician and physicist, invented and built the first digital calculate capable of performing addition with ease. Subtraction, division, and multiplication are possible to execute on this machine but requires convoluted methods.²⁰ Thirty years later, Gottfried Wilhelm von Leibniz, a strong advocate of the binary system, expanded on Pascal’s idea and designed and built a calculating machine called the Step Reckoner. The Step Reckoner carries out multiplication by repeated addition and shifting.²¹

In 1832, Charles Babbage designed a programmable calculating machine, the Analytical Engines. The engine is much more than a calculator. It was to be a general-purpose, fully program-controlled, automatic mechanical digital decimal computer. It was programmable using punched cards, an idea borrowed from Jacques Marie’s power loom mentioned above. The engine is capable of performing a dozen of functions and had a variety of output

¹⁸ <http://muslimheritage.com/article/800-years-later-memory-al-jazari-genius-mechanical-engineer>

¹⁹ <http://plato.stanford.edu/archives/spr2016/entries/aristotle-logic>

²⁰ <https://www.educalc.net/196488.page>

²¹ <http://www.gwleibniz.com/calculator/calculator.html>

options.²² The Analytical Engine was beyond the vision of any other mechanists in Babbage's time and is truly a marvelous invention. Unfortunately, Babbage was never able to complete building the machine.



A part of the mill and printing mechanism of the Analytical Engine, constructed by Henry Babbage.

In 1936, Alan Turing proposed the universal Turing Machine. Every Turing machine behaves like a program on a computer. The idea of the universal Turing Machine is to create a machine that could simulate an arbitrary Turing machine on arbitrary input. Say the universal machine U is fed with an input of some machine M, then U will compute the same sequence as M.¹ Fourteen years later, Alan Turing introduced the Turing test in his paper "Computing Machinery and Intelligence". The first and most basic version of the game was called the "imitation game", which involved no machine at all. In the modification of the "imitation game", a judge is to decide if he is having a conversion with a human or a machine. The test was only intended to evaluate whether a machine can be considered to think in a manner indistinguishable from a human. The test does not serve as an indication whether a machine

can be considered to think in a manner indistinguishable from a human.²³ The test does not serve as an indication whether a machine possess actual intelligence. Turing also admitted that the test is limited by the type of question being presented to the machine.²⁴

In 1956, at the Dartmouth Conference, the term "artificial intelligence" was coined.²⁵ In the years following the conference, numerous impressive breakthroughs were made in AI. There was lots of work being done to get machines to do things humans could do. It was not long before machines were able to solve math problems at university levels and understand languages. These successes were made possible thanks to the free spending by military research bodies, notably the Defence Advanced Research Projects (DARPA).²⁶ However, funding and research stalled in the late 1970s, in what later became known as the "AI winter".²⁷

In the 1980s and 1990s, funding began to flow back into the field of AI. Researchers then had the resources to develop much faster computers with more memory on board. Soon, IBM's

²² <http://history-computer.com/Babbage/AnalyticalEngine.html>

²³ <http://www.loebner.net/Prizef/TuringArticle.html>

²⁴ Ibid.

²⁵ <http://aitopics.org/misc/brief-history>

²⁶ <https://www.singularityweblog.com/ai-is-so-hot-weve-forgotten-all-about-the-ai-winter/>

²⁷ Ibid.



Deep Blue supercomputer was created and it triumphed over reigning World Chess Champion Garry Kasparov in 1997. Entering the 21th century, huge databases were made possible and computers began to be able to mine data, find information, and make inferences. This boom yielded more advanced face and speech recognition and language translation software. Researchers started to refine their AIs and in 2005, team from Stanford University won the DARPA Challenge. Their vehicle drove 11.78 km autonomously across the desert in just under seven minutes.²⁸ Artificial intelligence has transitioned from not being good enough to being, or at least soon going to be, too good for humans.

In 2005, Ray Kurzweil published his book *The Singularity is Near*, in which he made predictions of the impact of development of artificial intelligence and the transformation of our society. Kurzweil, now the Director of Engineering at Google working on projects involving machine learning language processing, has made 147 predictions since the 1990's and has maintained an eighty-six percent accuracy rate.²⁹ To name a few of his predictions, he envisioned that a computer would defeat a world chess champion by 1998, and that people would be able to talk to their computer to give commands by 2009. Kurzweil realized and theorized that rate of progress of an evolutionary process increases exponentially over time. He called this theory the Law of Accelerating Returns.³⁰ Based on this theory and other observations, he predicted that artificial intelligence will soon surpass human beings as the smartest and most capable life form on the planet. The fear of humans no longer being the most intelligent and superior life form on earth made many people wonder where the future of humanity would look like. Will artificial beings have the same ethics and morality as humans and will they value humanity in their decision making?

These concerns are not entirely groundless. It is arguable that fictional stories and Hollywood have made a significant influence. In many of the novels published and Hollywood films released in the past, artificial intelligence entities are often portrayed as a threat to humans. In 1968, the book *2001: A Space Odyssey* was published and features an unemotional killer, HAL 9000 computer. The book was later turned into a film and released in 2001. In *I, Robot* and *Ex Machina*, the AIs turn against humans purely for reasons of self-defence. In 1984, the first *Terminator* film was released. The movie's storyline revolves around the conflict between humans and machines led by AI system Skynet. In the movie, Skynet is able to travel back in time to prevent its human rival from ever being born. The movie was so pioneering and its designs so iconic that any news published on the topic of AI may seem incomplete without a picture of a robotic Arnie.

²⁸ <http://archive.darpa.mil/grandchallenge05/gcorg/index.html>

²⁹ <http://singularityhub.com/2015/01/26/ray-kurzweils-mind-boggling-predictions-for-the-next-25-years/>

³⁰ <http://www.kurzweilai.net/the-law-of-accelerating-returns>



Stepping into the 2010's, AIs have been growing smarter and more capable on an exponential scale. Not surprisingly, concerns over how AI will transform humanity have grown with the advancements made in AI. These concerns touch upon areas such as employment issues, inequality, autonomous killer robots, and supercomputers.

For those who have access to the Internet and technology, AI based tools started to take part in everyday life. The ability to gather and analyze huge amount of data has created many applications of AI. Every time someone makes a search on websites such as Facebook, Google, or YouTube, AIs make suggestions for the users.

In 2011, Apple introduced Siri intelligent virtual assistant as a part of iOS 5 in their iPhone 4S. Up to this day, with one simple command, Siri, as well as many other virtual assistants such as Cortana and Google Now, can provide users with all sorts of information. Some virtual assistance is even capable of providing suggestions proactively - before the user even asks! In recent years, autonomous cars have been making headlines frequently. Since October 9, 2014, Tesla electric cars equipped with Autopilot has been available to consumers. According to Tesla CEO Elon Musk, Autopilot can help reduce accidents by as much as 50%.³¹ Autopilot detects the car's surroundings with multiple ultrasonic sensors and a forward-facing camera. When activated, Autopilot is capable of steering the car, managing the speed of the car, and engaging breaks to avoid accidents. Autopilot by Tesla may sound impressive, but Tesla is not the only company working on autonomous cars. Other giants in tech and automobiles, such as Alpha, Apple, Audi, Mercedes-Benz, Nissan, NASA, and Uber have been reported working on self-driving automobiles.³² Back in August 2013, the Mercedes S 500 Intelligent Drive drove fully autonomously 100 kilometers from the German city of Mannheim to the city of Pforzheim. Mostly recently, Uber has partnered with Volvo and announced its plan to release a fleet of self-driving cars in Pittsburgh, PA. Starting from August 2016, customers have been able to summon self-driving cars, which are supervised by humans in the driver's seat, from their phones.³³

The use of AIs allows various miscellaneous tasks to be completed without much effort from humans and ultimately makes life easier for many. AI technologies have also been breaking grounds in other professional fields. In July 2016, University of Pittsburgh Medical Center (UPMC) announced that it has formed Pensiamo, an independent company that aims to help hospitals improve supply chain performance. Supply chain costs are the second-largest and fastest-growing expense behind labor costs for health care providers.³⁴ In today's dynamic environment, providers need to understand their costs at patient-specific level to succeed under performance-based payment system.³⁵ Pensiamo will combine the best of UPMC's healthcare supply chain experience with IBM Watson's capabilities. Experts expect Watson making a breakthrough by unlocking new insights from volumes of structured

³¹ <http://www.autoblog.com/2016/04/25/elon-musk-tesla-autopilot-accident-reduction/>

³² <http://www.bankrate.com/finance/auto/companies-testing-driverless-cars-1.aspx>

³³ <http://www.bloomberg.com/news/features/2016-08-18/uber-s-first-self-driving-fleet-arrives-in-pittsburgh-this-month-is06r7on>

³⁴ <http://phys.org/news/2016-07-artificial-intelligence-machine-health-chain.html>

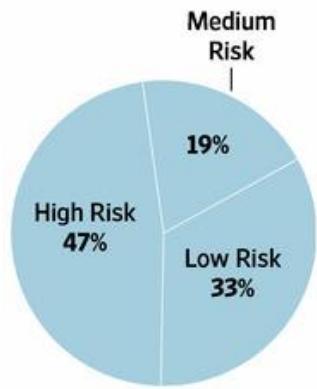
³⁵ <http://phys.org/news/2016-07-artificial-intelligence-machine-health-chain.html>



and unstructured existing data on medical products and treatments.³⁶ Not surprisingly, AI has already been able to diagnose patients and suggest treatments for a long time. Websites such as *Modernizing Medicine* gather data from existing patients and their treatment results. Increasingly, physician practices and hospitals are using supercomputers and homegrown systems to identify patients who are headed for kidney failures, cardiac disease, or postoperative infections.³⁷ In addition, as costs of robots declines, there is now the potential to use robots as health-care providers. The list goes on and on. In a word, the power of data analytics has already allowed AI to be deployed in manufacturing and service sectors.

On the Job

A study by two University of Oxford researchers found computerization will pose a significant threat to the jobs of nearly half of the American workforce at some point.



Note: Numbers don't add to 100 due to rounding

The 10 occupations most and least susceptible to computerization

MOST SUSCEPTIBLE		LEAST SUSCEPTIBLE	
1	Telemarketers	1	Recreational therapists
2	Title examiners, abstractors and searchers	2	First-line supervisors of mechanics, installers and repairers
3	Sewers, by hand	3	Emergency-management directors
4	Mathematical technicians	4	Mental-health and substance-abuse social workers
5	Insurance underwriters	5	Audiologists
6	Watch repairers	6	Occupational therapists
7	Cargo and freight agents	7	Orthotists and Prosthetists
8	Tax preparers	8	Health-care social workers
9	Photographic process workers and processing machine operators	9	Oral and maxillofacial surgeons
10	New-accounts clerks	10	First-line supervisors of fire fighting and prevention workers

Source: "The Future of Employment: How Susceptible Are Jobs to Computerisation?" by Carl Benedikt Frey and Michael A. Osborne, published Sept. 17, 2013
THE WALL STREET JOURNAL

An infographic on the predicted impact AI will be having on the job market.³⁸

However, with new technologies come new challenges and concerns. As AI has become to be a cheaper, more widespread, and more efficient source of labor in many industries, experts, such as Elon Musk and Andrew Ng, are now concerned that the use of AI will leave more people unemployed and worsen inequality.³⁹ According to the latest Internet Trends Report, almost 2.8 billion people now access the internet, with another 200 million new users annually.⁴⁰ As mentioned above, though cell phones themselves are simply machines, smartphones nowadays are integrated with numerous AI

³⁶ Ibid.

³⁷ <http://www.wired.com/2014/06/ai-healthcare/>

³⁸ <http://www.wsj.com/articles/does-artificial-intelligence-pose-a-threat-1431109025>

³⁹ <http://www.rdm.co.za/technology/2016/01/26/could-artificial-intelligence-worsen-inequality>

⁴⁰ <http://www.rdm.co.za/technology/2016/01/26/could-artificial-intelligence-worsen-inequality>



based functions. However, only 40% of the 5.2 billion cellphone holders are using smartphones.⁴¹ As a result, only a portion of the human population benefit from AIs.

To make matters worse, small developing countries in Africa and other regions lack the capital and capacity to compete with tech giants such as Apple, Google, or IBM.⁴² In addition, many fear that the job market will undergo dramatic changes due to the advantages of AI "workers". Robots with AI onboard can operate all day without interruption, making them cost-competitive with human workers. Jobs that can be broken down into a collection of explicit routines can be translated into codes and programs and performed by algorithms or robots. AIs are more efficient, more reliable, and most importantly, cheaper. Simply put, robots make great replacements for low-skilled workers. As a result, only high-skilled jobs will be remaining and the onus will be on the under-educated people to retrain for those technical jobs. As a matter of fact, the current global employment status is already worrisome. Account to Gallup's Global Reports released in October 2015, 3 billion people desire a full-time job, yet only 1.3 billion actually have one.⁴³ The reports also showed wide regional variations, from a high payroll-to-population rate of 44% in North America to 11% in sub-Saharan Africa. Barbara Birungi, Founder and Director of Women in Technology in Uganda, said that the education system in Africa was still training people for a traditional job market.⁴⁴ When all these factors come into play, it is not hard to envision that unemployment will increase and astronomic reward will accrue to a few tech titans, those who are less susceptible to such change caused by artificial intelligence, exacerbating inequalities. The only merit for replaced workers is an increased leisure time.

While experts in business are concerned with the impact on job markets and economy, some have already noticed an ongoing arms race between technologically advanced nations. Between 2009 and 2013, 17 billion dollars was poured into the AI sector, with more than 60% annual growth every year. In 2013, the European Union launched a 10-year scientific study, the Human Brain Project, estimated to cost 1.33 billion dollars. In the same year, the United States started a similar venture, the 4.5 billion dollar BRAIN initiative.⁴⁵ Recently, Google claims that the D-Wave 2X is 100 million times faster than any of today's machines. Google has also referred to its working as "quantum artificial intelligence." Though these projects may seem harmless, according to Stephen Hawking, "governments seem to be engaged in an AI arms race, designing planes and weapons with intelligent technologies." It is not hard to see why governments are so interested in developing robots for military purposes.

At the recent Chinese People's Political Consultative Conference, Robin Li, founder and CEO of Chinese online search giant Baidu, proposed a state-level project on AI systems called "China Brain". The project will focus on four research areas: intelligent human-machine interaction, big data analysis and

⁴¹ Ibid.

⁴² Ibid.

⁴³ Ibid.

⁴⁴ <http://www.un.org/press/en/2013/gaef3385.doc.htm>

⁴⁵ <http://www.intellectualcapitals.com/china-joins-artificial-intelligence-race/>



prediction, smart medical diagnosis, smart drones and piloting technology, as well as robotics technologies for military and civilian use.⁴⁶ It is no doubt that there are certain benefits to replacing soldiers with autonomous robots. These autonomous lethal robots are thought to engage targets and obliterate them without being supervised by humans. Not only are there ethical concerns with this particular use of AI, many are worried that these technologies will fall into the wrong hands, such as terrorist groups. As AI becomes more powerful than ever, will any human have the control of these robots? That also leads to the next question, what would happen once an artificial super-intelligence is created.

Recently, there have been discussions on the question what will keep ASIs, once they are created, from improving themselves until they have no need for humanity. This prospect has caused many to be concerned over the impact of ASI has on the fate of humanity. Astrophysicist Stephen Hawking told the BBC back in 2015 that "the development of full artificial intelligence could spell the end of the human race."⁴⁷ Tesla founder and CEO Elon Musk called AI "[human's] biggest existential threat."⁴⁸ Former Microsoft Chief Executive Bill Gates has voiced his agreement. Stephen Hawking said during an interview that "once machines reach the critical stage of being able to evolve themselves, [humans] cannot predict whether their goals will be the same as ours."⁴⁹

Due to the fact that an ASI will almost certainly be more intellectually advanced than human, the concern over the impact ASI has on humanity is quite multifaceted. Most notably, experts are concerned that humans may lose the control of a super-intelligent machine. Though fully autonomous robots nowadays can be switched off by humans, the switch only exists because it is outside the domain of the robot. Once a super-intelligent machine can make predictions about the consequences of someone hitting their off switch, they might prevent humans from ever doing that.⁵⁰ Similarly, an ASI might take actions to prevent another ASI from being created for the sake of self-preservation.⁵¹ In addition, some are worried that an ASI would fall for evil. To be exact, they are worried that the ASI will not follow the same ethical guidelines as humans. Even if ethical guidelines are programmed into an ASI, who should be making the guideline for the AI? In a situation like the famous Trolley Problem, what decision should an AI make?⁵² It is without doubt that artificial intelligence and its applications can bring unimaginable prosperity to humanity, but humans should seek the balance between moral values and preservation of humanity, and intellectual curiosity and economic growth as AI continues to grow smarter and more capable.

⁴⁶ Ibid

⁴⁷ <http://www.independent.co.uk/news/science/stephen-hawking-pollution-stupidity-artifical-intelligence-warfare-biggest-threats-mankind-a7106916.html>

⁴⁸ Ibid.

⁴⁹ Ibid

⁵⁰ <http://www.wsj.com/articles/does-artificial-intelligence-pose-a-threat-1431109025>

⁵¹ Ibid.

⁵² Ibid.

It appears that the United Nations have been mainly concerned with lethal autonomous weapons. In recent years, various organs and staff members of the United Nations have made contribution to promote international discussion and have called on its member states to halt the development and research on lethal autonomous robots (LARs) and Lethal Autonomous Weapons Systems (LAWS). In 2013, the United Nations Special Rapporteur on extrajudicial, summary, or arbitrary executions, Christof Heyns, called for a global pause in the development and deployment of LARs.⁵³ In his report, he asserts that the use LARs is adding an extra dimension to the legal, moral and religious dilemmas confronted when one human being considers killing another.⁵⁴ Heyns warns that if little may be known about the potential risks of a lethal technology before it is deployed, formulating an appropriate response would be difficult. Recalling the experience of the two World Wars, Heyns argues that "the United Nations was set up by people who had fought a terrible war ... The commitment to [prevent a global war] can be understood as a consequence of the long-term and indeed inter-generational effects of insisting on human responsibility for killing decision."⁵⁵ Heyns called on the Human Rights Council to press all States for moratoria on the testing, production, assembly, transfer, acquisition, deployment and use of LARs, until a governing framework is agreed. As the Special Rapporteur had wished, in the year of 2014, 2015, and 2016, the United Nations held three conventions on Certain Conventional Weapons (CCW) meetings. Over the course of three years, experts and state parties have been debating around LAWS and the four key issues of LAWS. These key issues are the definition of autonomy and whether such definition is necessary at all, the extent of human control in LAWS, establishment of a responsibility and accountability framework, and the effectiveness of weapon reviews in ensuring the lawful use of LAWS.⁵⁶ The fifth CCW review will take place in December 2016 and a Preparatory Committee will be held in early September 2016.

On the other hand, the United Nations has published several reports on the subject of application and development of artificial intelligence in other areas at various occasions. In an interview with TechRepublic, the United Nations Chief Information Technology Officer (CITO) and Assistant Secretary-General of the Office of Information and Communications Technology, Atefah Riazi, said artificial intelligence might be the last innovation humans create. Riazi said that AIs will be innovating and humans need to think about the ramifications and their role as technologists. Humans have reached their limit, Riazi believes, artificial intelligence will transform the world as a super intelligent species.⁵⁷ At last, she emphasized that it is impossible to control technology and that policy makers have the responsibility to consider the consequences of rapidly evolving innovation. Having a similar vision as Riazi, Friedrich Soltau, a sustainable development officer of the United Nations Department of Economic and Social Affairs, provided a close examination of how AI will impact global employment and the economy in the 2016 Global Sustainable Development Report. At the end of the section, Soltau listed some of the issues that should be considered by policy makers. These issues include: strengthening social protection systems; implementing education policies that foster the skills required for a flexible, computer-literate workforce; policies that promote shifting the labour force from low to higher skilled jobs, with enhanced retraining and safety nets for workers adversely affected by trade agreements; and policies that promote investment in research and development, fostering innovation in developed countries and emulation in developing countries.⁵⁸

⁵³ <http://www.ohchr.org/EN/NewsEvents/Pages/Acallforamoratoriumonthedevelopmentrobots.aspx>

⁵⁴ Ibid.

⁵⁵ Ibid.

⁵⁶ <https://www.justsecurity.org/30682/2016-ccw-experts-meeting-laws/>

⁵⁷ <http://www.techrepublic.com/article/united-nations-cito/>

⁵⁸ https://sustainabledevelopment.un.org/content/documents/968825_Soltau_Automation%20and%20artificial%20intelligence%20-%20what%20could%20it%20mean%20for%20sustainable%20development.pdf



It is no doubt that the issue at hand is multifaceted, thus delegate must take a comprehensive approach to deal with all aspects of the technology. It is important to note that a great portion of the issue and concerns about artificial intelligence is largely theoretical.

Technologies such as ASI are yet to be created. Nonetheless, as the Special Rapporteur on extrajudicial, summary, or arbitrary executions and the CITO of the United Nations have said, humanity needs to precautionary measures to preserve humanity.

At the same time, keep in mind that the commission acts as a forum for its members to examine science and technology questions and their implications for development, to advance in their understanding on science and technology policies, and to formulate recommendations and guidelines on science and technology matters within the United Nations System. Hence, a resolution centered around the idea of imposing a complete moratorium on the development and application of artificial intelligence is not practical and, to some extent, does not agree with the mandate of the community. Last but not least, the resolution should be inclusive of all member states of the United Nations and promote sustainable development.

With regards to the content of the resolution, it is expected that the resolution addresses the problems mentioned above to a sufficient degree. To name a few, the resolution should touch upon areas include: measures to ensure human control over ASI, methods to enforce ethical and moral values upon AIs, framework for international discussion and regulation, further implementation of AIs in industries, education training programs in response to the shift in the job market, and policies to promote investment in research and development.

European Union (EU)

In 2013, the European Union launched a 10-year scientific study, the Human Brain Project, estimated to cost 1.33 billion dollars. In 2014, the European Parliament adopted a resolution on the use of lethal autonomous robots. The resolution calls on the EU member states, the Council of Ministers of the EU, and the EU's High representative for Foreign Affairs and Security Policy to "ban the development, production and use of fully autonomous weapons which enable strikes to be carried out without human intervention."⁵⁹ In 2016, it has emerged that the EU wants to introduce laws specific to AI entities that could give them their own civil rights regulations and limit on how many jobs they could replace from humans.⁶⁰

Latin America

Countries such as Brazil, Venezuela, Peru, and Argentina emphasize the importance of discussing the development and research of LAWS and ramifications of their proliferation.⁶¹ At the same time, there is existing concern that once artificial intelligence replaces works in the business processing outsourcing (BPO) industry, foreign companies may find it cheaper to move out of Latin America to their own countries, dampening their economy.⁶² Furthermore, Luciano Tourn, an executive director of the Argentine health services provider Grupo Gamma, points out that health systems need a large supply of highly-skilled human capital. For this sector, the challenge is not a lack of jobs, but a shortage of qualified workers.⁶³ The application of AI in this sector could worsen the current situation.

Organization of Islamic Cooperation (OIC)

In the concluding speech of the 15th General Assembly Meeting of Comstech, Ambassador M. Naeem Khan pointed out that "the Muslim world has lagged behind discernibly in contributing to [the] science advancements (in artificial intelligence)."⁶⁴ He emphasized that nations at the forefront of these scientific and technological breakthroughs will be in the leading role of a socio-economic transformation. At last, he introduced the Ibne-Haitham Programme, under which scientists from the OIC member states will receive scholarships and research grants.⁶⁵

⁵⁹ <https://www.stopkillerrobots.org/2014/02/europeanparliament/>

⁶⁰ <http://www.express.co.uk/news/science/682759/RIGHTS-FOR-ROBOTS-EU-reveals-plans-for-new-class-of-AI-electro-person>

⁶¹ http://stopkillerrobots.org/wp-content/uploads/2013/05/HRC_Argentina_09_30May2013.pdf

⁶² http://www.huffingtonpost.com/gabriel-sanchez-zinny/artificial-intelligence-latin-america_b_7988278.html

⁶³ Ibid.

⁶⁴ <http://www.pid.gov.pk/?p=21101>

⁶⁵ <http://www.pid.gov.pk/?p=21101>



United States of America

The White House sees the potential of AIs in many fields. America has implemented AI in healthcare, education, transportation, and many more. The White House, however, does recognize the risks carried by artificial intelligence and the need for policy changes in response to its proliferation.⁶⁶ At the same time, the Federal Government is working to leverage AI for public good and toward a more effective government. A new National Science and Technology Council Subcommittee on Machine Learning and Artificial Intelligence has formed to monitor state-of-the-art advances and technology milestones in AI and machine learning.⁶⁷

China

China is making moves in the race to create human-like AI. The Chinese Academy of Science believes the difficulties of building an AI system come from the limited understanding of human brain. The Academy seeks to integrate brain science and smart technology to lead future development of AI, with the potential to reshape China's industrial, military and service sectors.⁶⁸

⁶⁶ <https://www.whitehouse.gov/blog/2016/05/03/preparing-future-artificial-intelligence>

⁶⁷ Ibid.

⁶⁸ <http://www.intellectualcapitals.com/china-joins-artificial-intelligence-race/>



1. On an ethical level, should autonomous machines be allowed to take a human life?
2. Should the United Nations take measure to prevent ASI from ever being created?
3. What protocols should be put in place to restrict or guide the development of AI?
4. How will the committee prevent an AI arms race?
5. How should the international community ensure that AIs follow a moral code? What constitutes this moral code?
6. What measures should be put in place in response to the negative impact AI will make in the job market?
7. How would the UN bodies enable developing countries to benefit from AI?
8. How will AI be deployed to promote sustainable development?

<http://www.rdm.co.za/technology/2016/01/26/could-artificial-intelligence-worsen-inequality>

<http://www.wsj.com/articles/dallas-police-believed-to-be-first-to-use-robot-lethally1468001810>

<http://www.techrepublic.com/article/united-nations-cito/>

<http://www.recode.net/2016/4/13/11644890/ethics-and-artificial-intelligence-the-moral-compass-of-a-machine>

<https://www.washingtonpost.com/news/the-switch/wp/2015/03/18/elon-musk-human-driven-cars-may-be-outlawed-because-theyre-too-dangerous/>

<http://www.wsj.com/articles/does-artificial-intelligence-pose-a-threat-1431109025>



PacificMUN 2017

Works Cited

"A Call for a Moratorium on the Development and Use of Lethal Autonomous Robots." Office of the High Commissioner, United Nations Human Rights Council. Web. n.d. Accessed 22 August 2016.
<http://www.ohchr.org/EN/NewsEvents/Pages/Acallforamoratoriumonthedevelopmentrobots.aspx>

Adros. "Different Types of Artificial Intelligence." *Alternative Mindsets*. N.p. Web. 5 Feb. 2015. Accessed 20 August 2016. <http://alternativemindsets.co.uk/different-types-artificial-intelligence/>

Al-Hassani, Salim. "800 Years Later: In Memory of Al-Jazari, A Genius Mechanical Engineer." *Muslim Heritage*. Web. n.d. Accessed 21 August 2016. <http://muslimheritage.com/article/800-years-later-memory-al-jazari-genius-mechanical-engineer>

Austin, Jon. "Rights for Robots: EU Reveals Plans for New Class of AI Electro-Person." *Express*. Express Newspapers. Web. 23 Jun. 2016. Accessed 23 August 2016.
<http://www.express.co.uk/news/science/682759/RIGHTS-FOR-ROBOTS-EU-reveals-plans-for-new-class-of-AI-electro-person>

"Blaise Pascal (1623~1662)" *Educalc.net*. Web. n.d. Accessed 23 August 2016.
<https://www.educalc.net/196488.page>

"Brief History." *AITopics*. Web. n.d. Accessed 19 August 2016. <http://aitopics.org/misc/brief-history>
McShane, Sveta. "Ray Kurzweil's Four Big Insights for Predicting the Future." *SingularityHUB*. Web. 9 Jun. 2016. Accessed 19 August 2016. <http://singularityhub.com/2016/06/09/ray-kurzweils-four-big-insights-for-predicting-the-future/>

Chafkin, Max. "Uber's First Self-Driving Fleet Arrives in Pittsburgh This Month." *BloombergBusinessweek*. Bloomberg L.P. Web. 18 Aug. 2016. Accessed 22 August 2016.
<http://www.bloomberg.com/news/features/2016-08-18/uber-s-first-self-driving-fleet-arrives-in-pittsburgh-this-month-is06r7on>

"China Joins Artificial Intelligence Race." *Intellectual Capitals*. Web. n.d. Accessed 25 August 2016.
<http://www.intellectualcapitals.com/china-joins-artificial-intelligence-race/>

Dalakov, Georgi. "The Analytical Engine of Charles Babbage." *History of Computers*. Web. n.d. Accessed 22 August 2016. <http://history-computer.com/Babbage/AnalyticalEngine.html>

Diamandis, Peter. "Ray Kurzweil's Mind-Boggling Predictions for the Next 25 Years." *SingularityHUB*. Web. 26 Jan. 2015. Accessed 23 August 2016. <http://singularityhub.com/2015/01/26/ray-kurzweils-mind-boggling-predictions-for-the-next-25-years/>

Douglass, Christine. "Applying Artificial Intelligence and Machine Learning to Transform Health Care Supply Chain." *Phys.org*. Science X network. Web. 8 Jul 2016. Accessed 22 August 2016.
<http://phys.org/news/2016-07-artificial-intelligence-machine-health-chain.html>



PacificMUN 2017

Works Cited

Faggella, Daniel. "AI is So Hot, We've Forgotten All About the AI Winter." *Singularity Weblog*. Web. 25 Aug. 2015. Accessed 24 August 2016. <<https://www.singularityweblog.com/ai-is-so-hot-weve-forgotten-all-about-the-ai-winter/>>

Felten, Ed. "Preparing for the Future of Artificial Intelligence." the White House. Web. 3 May. 2016. Accessed 24 August 2016. <<https://www.whitehouse.gov/blog/2016/05/03/preparing-future-artificial-intelligence>>

Ford, Chris. "The International Discussion Continues: 2016 CCW Experts Meeting on Lethal Autonomous Weapons." *Just Security*. Web. 20 Apr. 2016. Accessed 22 August 2016. <<https://www.justsecurity.org/30682/2016-ccw-experts-meeting-laws/>>

Greenwald, Ted. "Does Artificial Intelligence Pose a Threat?" *The Wall Street Journal*. Dow Jones & Company. Web. 10 May 2015. Accessed 20 August 2016. <<http://www.wsj.com/articles/does-artificial-intelligence-pose-a-threat-1431109025>>

Hernandez, Daniela. "Artificial Intelligence is Now Telling Doctors How to Treat You." *Wired*. Web. 2 Jun. 2014. Accessed 22 August 2016. <<http://www.wired.com/2014/06/ai-healthcare/>>

Holly, Peter. "Elon Musk: Human-driven cars may be outlawed because they're 'too dangerous'." *The Switch*. The Washington Post. Web. 18 Mar. 2015. Accessed 20 August 2016. <<https://www.washingtonpost.com/news/the-switch/wp/2015/03/18/elon-musk-human-driven-cars-may-be-outlawed-because-theyre-too-dangerous/>>

Kamvysselis, Manolis. "Universal Turing Machine." MIT. n.d. Accessed 23 August 2016. <<http://web.mit.edu/manoli/turing/www/turing.html>>

Khan, M. Naeem. 15th General Assembly Meeting of Comstech, Islamabad. 1 Jun. 2016. Web. Accessed 24 August 2016. <<http://www.pid.gov.pk/?p=21101>>

Kurzweil, Ray. "The Law of Accelerating Returns." *Kurzweil AI*. KurzweilAI Network. Web. 7 Mar. 2001. Accessed 24 August 2016. <<http://www.kurzweilai.net/the-law-of-accelerating-returns>>

"Leibniz's Calculating Machine." *Leibnitiana*. Web. n.d. Accessed 22 August 2016. <<http://www.gwleibniz.com/calculator/calculator.html>>

Migliore, Greg. "Elon Musk Says Tesla Autopilot Reduces Accidents by 50 Percent." *autoblog*. AOL Inc. Web. 25 Apr. 2016. Accessed 25 August 2016. <<http://www.autoblog.com/2016/04/25/elon-musk-tesla-autopilot-accident-reduction/>>

Patterson, Dan. "United Nations CITO: Artificial Intelligence Will Be Humanity's Final Innovation." *TechRepublic*. CBS Interactive. Web. n.d. Accessed 22 August 2016. <<http://www.techrepublic.com/article/united-nations-cito/>>



- Samuels, Gabriel. "Stephen Hawking Says Pollution and 'Stupidity' Still Biggest Threats to Mankind." *Independent*. Web. 28 Jun. 2016. Accessed 20 August 2016.
[<http://www.independent.co.uk/news/science/stephen-hawking-pollution-stupidity-artifical-intelligence-warfare-biggest-threats-mankind-a7106916.html>](http://www.independent.co.uk/news/science/stephen-hawking-pollution-stupidity-artifical-intelligence-warfare-biggest-threats-mankind-a7106916.html)
- Sidner, Sara. "How Robot, Explosives Took out Dallas Sniper in Unprecedented Way" *CNN.com*. Cable News Network. Web. 12 Jul. 2016. Accessed 22 August 2016. <<http://www.cnn.com/2016/07/12/us/dallas-police-robot-c4-explosives/>>
- Smith, Robin, "Aristotle's Logic", *The Stanford Encyclopedia of Philosophy* (Spring 2016 Edition), Edward N. Zalta (ed.), Web. 21. Mar. 2015. Accessed 23 August 2016.
[<http://plato.stanford.edu/archives/spr2016/entries/aristotle-logic/>](http://plato.stanford.edu/archives/spr2016/entries/aristotle-logic/).
- Stremlau, John. "Could Artificial Intelligence Worsen Inequality?" *Rand Daily Mail*. Web. 26 Jan. 2016. Accessed 24 August. 2016. <<http://www.rdm.co.za/technology/2016/01/26/could-artificial-intelligence-worsen-inequality>>
- Strohm, Mitch. "Driverless Cars: 6 Firms on the Cutting Edge." *Bankrate.com* Web. n.d. Accessed 25 August 2016. <<http://www.bankrate.com/finance/auto/companies-testing-driverless-cars-1.aspx>>
- Tate, Karl. "History of A.I.: Artificial Intelligence (Infographic)" *LifeScience*. Purch. Web. 25 Aug. 2014. Accessed 19 August 2016. <<http://www.livescience.com/47544-history-of-a-i-artificial-intelligence-infographic.html>>
- "The DARPA Grand Challenge 2005." DARPA. Web. 2005. Accessed 28 August 2016.
[<http://archive.darpa.mil/grandchallenge05/gcorg/index.html>](http://archive.darpa.mil/grandchallenge05/gcorg/index.html)
- Turing, A.M. (1950). Computing machinery and intelligence. *Mind*, 59, 433-460. Web. Accessed 22 August 2016. <<http://www.loebner.net/Prizef/TuringArticle.html>>
- United Nations, Department of Public Information, *With New Technologies Will Come Challenge of Learning New Skill Sets, Speaker Tells Second Committee in Discussion on Future Employment*. GA/EF/3385. 8 Nov. 2013. Accessed 22 August. 2016. <<http://www.un.org/press/en/2013/gaef3385.doc.htm>>
- Zinny, Gabriel. "In a World of Artificial Intelligence, Where Will Latin Americans Work?" *The Huffington Post*. TheHuffingtonPost.com. Web. 17 Aug. 2015. Accessed 22 August 2016.
[<http://www.huffingtonpost.com/gabriel-sanchez-zinny/artificial-intelligence-latin-america_b_7988278.html>](http://www.huffingtonpost.com/gabriel-sanchez-zinny/artificial-intelligence-latin-america_b_7988278.html)