WHAT IS ARTIFICIAL INTELLIGENCE (AI)?

WHAT IS AI?

Simply stated, artificial intelligence (AI) is "human intelligence or behaviour demonstrated by machines". In practice, an AI is a computer program (software). There is no precise definition of AI, and the meaning has evolved over time, but a number of technologies are generally understood to be included: pattern recognition, image recognition, voice recognition, and understanding of natural language.

There are a number of devices for which AI is particularly useful, such as robots, autonomous vehicles and "drones", which use AI for observation, navigation, task planning, and avoiding collisions. Voice interaction by consumer devices such as Amazon Alexa and Google Home are also examples of AI. But AI is not exclusive to robots and devices – it also plays an important role in business. For example, credit card companies have been using AI systems effectively for years to prevent fraudulent transactions.

WHY HAS AI SUDDENLY BECOME SO POPULAR?

Most of the ideas behind AI are not new, with some dating from the 1970s. However, a few recent changes have opened up new possibilities in AI:

(a) an increase in computing power has made tasks that were previously out of our reach possible;

(b) a large and growing amount of data now available from a rapidly digitizing world (photos, traffic data, telephone calls, website traffic and activity on social networks) can be used to train computers to recognize patterns; and,

(c) new algorithms have been developed to make use of this new hardware and data – Machine Learning and, in particular, Neural Networks are techniques where much progress is being made.

Although this revolution in computer science that is still evolving, it is already clear that AI is one of the most important technologies of our time, perhaps the most important. Google's CEO Sundar Pichai and a number of technology experts have called AI "as profound as electricity".

WHAT DOES AI MEAN FOR THE WORLD AND FOR THE UN?

The possible applications of AI seem almost endless. With sufficient learning, the vast majority of human jobs could be done cheaper and more effectively by AI. The potential implications of AI for the world are enormous. Whether these implications will be mostly good or bad is much debated. Some respected scientists, successful IT entrepreneurs and others have warned that AI may turn out be humanity's downfall: risks mentioned include discrimination or bias in AI systems or even an advanced AI in the future getting out of control and taking over the world. Others are optimistic about the efficiencies and opportunities created: AI aids progress in all areas of science, creates new conveniences and makes life better. For example, self-driving cars could drastically reduce the need for private cars and avoid millions of deaths from traffic accidents.

In any case, the genie is out of the bottle –AI cannot be un-invented. The loss of certain types of jobs (ranging from radiologists to truck drivers and insurance claim assessors) already seems unavoidable in the near future. The best we can do at the moment is to maximize the number of positive applications of AI that benefit humanity and create norms and ethics for responsible use of AI so as to contain the negative effects. Young generations should be prepared to live and work alongside AI systems. In Dubai and several Chinese cities the government is already deploying robots to deliver public services and this trend will no doubt continue.

Reasons for the rapid rise of AI

1 Faster **computing**

2 Availability of **Big data**

3 New **algorithms**

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THE ETHICS OF AI

A few countries already routinely use unmanned planes ("drones") equipped with weapons and AI systems in military operations. As these AI systems improve they will inevitably be given more decision-making power, which raises important ethical questions. The UN's Conference of the Convention on Certain Conventional Weapons has already established a Group of Governmental Experts on Lethal Autonomous Weapon Systems. A group of over 1000 prominent AI researchers, entrepreneurs and others have sent an open letter to the UN expressing their concern about the possibility of autonomous weapons.

Ethics are found in other types of AI systems as well. As AI systems are used to support decisions in recruitment, issuance of loans or approval of online publications, and many other areas, avoiding bias is important. However, with modern AI systems such as Neural Nets, it is incredibly difficult, if not impossible, to know why an AI system came to a certain conclusion. The laws that exist in human society preventing discrimination are hard to implement and the effects of possible bias of AI systems are hard to predict. The new norms and ethics needed can come from all parts of society: recently employees at Microsoft and Google have revolted against their (AI) technologies being use for certain government programs, which had led to government contracts being canceled. I has also prompted companies such as Google to announce their "AI principles".

EQUAL ACCESS TO AI

AI capacity is currently concentrated within a few large companies: Google, Amazon, Facebook and Baidu are leading by a wide margin. Not coincidently, these are companies that own large quantities of data – AI engineers need large amounts data to train the systems. AI experts expect there to be only a few "winners" in the AI race, and they will accumulate much power and wealth. This may be true for companies or for nations. Does this mean AI will increase the gap between rich and poor, between the haves and have nots? Or will applications of AI for society, such as preventing epidemics, improving infrastructure and increasing inclusiveness, put poor nations on equal footing with rich ones? It is clear that AI makes data "the new oil", and nations should be conscious of what data they allow companies to collect about citizens.

Some influential and successful people in the IT area have set up a non-profit called OpenAI (openai.com) that aims to make the latest AI technology freely accessibly to all. It does not yet solve the access to data, but an increasing number of Open Data initiatives exist and together these may lead to a more equitable AI future.

USES OF AI TECHNOLOGY FOR THE UN SECRETARIAT

OICT has applied AI in a number of prototypes of applications so far:

- A document summarization tool *(trained through feedback from users)*
- Violence prediction for elections *(trained with data from previous events)*
- Analysis of political alignment in GA votes *(using clustering techniques)*
- Classification of Humanitarian Documents
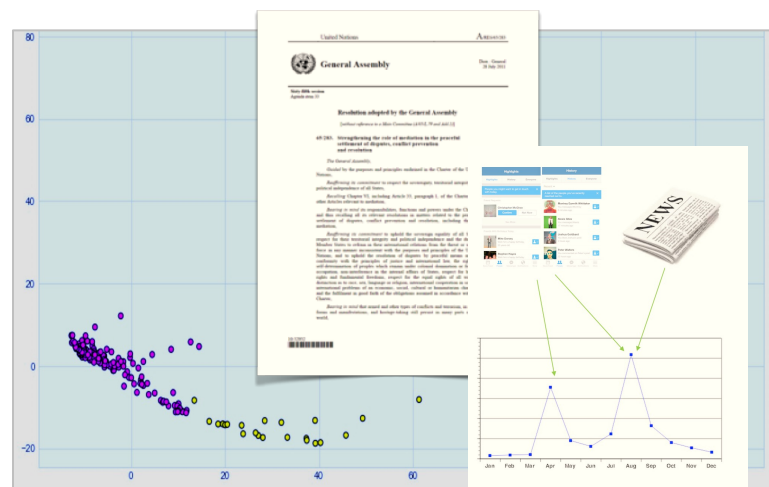
There are many other opportunities to use AI in the Secretariat. A few ideas include:

- Automated responses to staff queries using text or voice "bots".
- More effective recruitment and human resource management
- Image recognition for humanitarian assessment or for security
- Predicting the impact of free trade pacts
- Identifying peace building opportunities through social media analysis

Capacity building for member states would also be a valuable service the UN secretariat could offer.

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