



World Federation of Engineering Organizations  
Fédération Mondiale des Organisations d'Ingénieurs

# **Promoting Responsible AI innovation for Sustainable Development**

***GONG Ke***

**World Federation of Engineering Organizations**

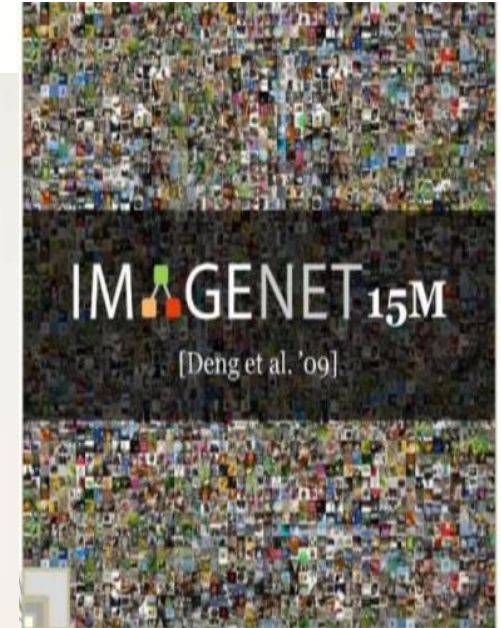




**In recent years, with the help of vast and fast development of networking/INTERNET and IoT computing power/cloud and high performance computing, BIG DATA and DEEP LEARNING algorithm, AI has made significant breakthrough,.....**

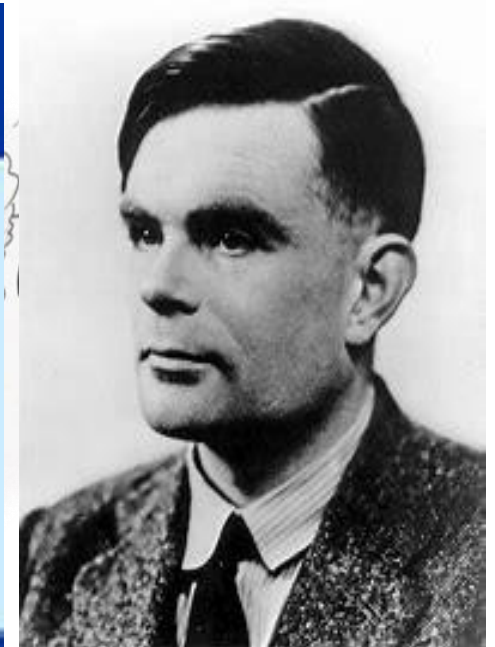


# AI outperformed human in image recognition !





# The Turing Test has been passed!



On June 7, 2014, the memorial day of 60 years of the death of the father of Computer Science, Alan Turing, a *Chatbot Eugene Goostman* has firstly passed the **Turing Test** in the world. More than 33% judges of the Turing Test 2014 believed that Eugene is a Ukraine teenager of 13.



# Torobo might be enrolled by Japanese Universities



A Robot called **Torobo** developed by NII of Japan, who has entered the many Japanese university's examination in 2015, and got a total score of **511**:

world history	66.3,
physics	59,
Japanese	49.7,
English	36.2,



far beyond **416** of average, could be enrolled into 441 private and 33 public universities, as reported by Japanese media.



# AlphaGo beats the best human Go players







**With its potential capabilities of solving long-term problems of human society by overcoming blinding diseases, providing affordable medical care, delivering high quality teaching, improving energy efficiency and so forth, AI is no doubt becoming an accelerator for economic and social development with sustainability.**





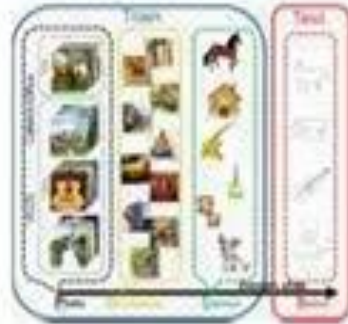
**However, AI is still facing many technical difficulties, such as,.....**



# Bottle-necks of AI development



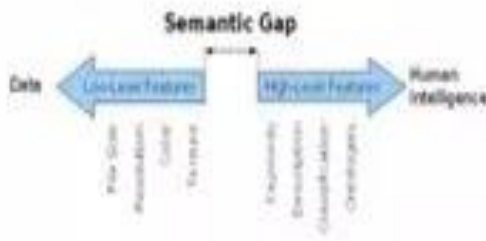
**Data Dependency**



**Non-transferability**



**Low Energy efficiency**



**Semantic Gaps**



**Not explainable**

**Reliable?**



**And, AI is much more than another type of technology, it plays ever significant role in human society, so that it is also facing serious humanistic challenges, or bringing major challenges to human society.....**



# Major Humanistic Challenges

- **Infringement of data and privacy**
- **Abuse of and monopolization by asymmetric information power**
- **Prejudices and ethnic rivalries**
- **Marginalization and impoverishment of vulnerable people and increase inequality**
- **deadly AI weapon and malicious usage by terrorism**



# Is AI a WOLF or a DOG?





# Insufficient understanding of AI's Role in Society

- ◆ **The ethical and legal developments are far behind AI development.**
- ◆ **The public awareness about AI is highly limited by movies and novels, the concerns raised by social scientists are important but less relevant to current technical deployment.**
- ◆ **Very limited and insufficient discussion have carried out on this issues. Inter-disciplinary and international dialogues are very important and strongly required.**



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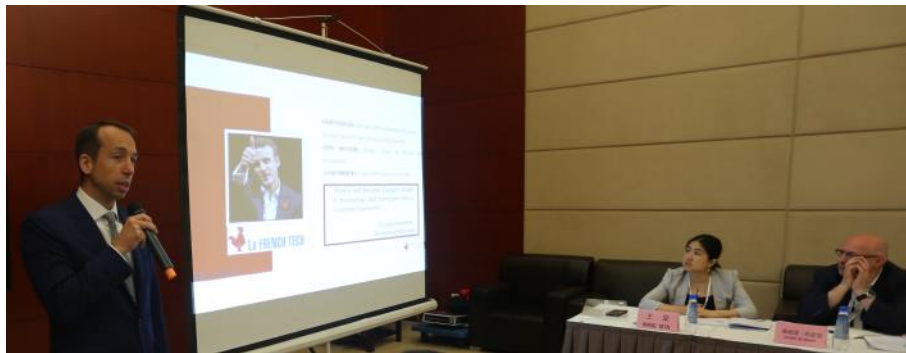
**The Major Group of Scientific and Technological Community – WFEO & ISC – shoulders the responsibility to promote responsible AI innovation for sustainable development,.....**





# WFEO Works on Responsible AI Innovations

- **The WFEO Standing Technical Committee on Engineering for Innovative Technology (CEIT) has conducted various activities**



Special Workshop on “AI and Human Decision” in World Intelligence Congress

Multidisciplinary meeting on AI and Engineering Ethics

Drafting position paper on Data Integrity



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## Draft Concept Notes of Position Paper on Big Data

–Big Data Engineering Sustainable Future /Big Data Ethics for Sustainable Engineering / Responsible Engineer, Sustainable Development

Today, Big Data is widely used by individuals, governments, civil society, companies, international organizations to increase their productivity and service quality as well as management efficiency. Various kinds of data such as call logs, bank transactions, traffic flow, governmental files, environmental and climate data, scientific findings, medical treatments, manufacturing data, security monitoring data, online searches and online trades, etc. are merged and analyzed t





# The Major Group of STC (WFEO and ISC) is calling on

1. Getting **consensus** on **AI ethical principles**
2. Studying on how to convert these consensuses to **policies, rules, laws**, etc.
3. Setting **technical standards**, to ensure the ethical requirement to be effectively embedded into AI system and could be tested and verified.
4. **Educating people**, who design, manufacturing, selling and using AI, how to **responsible conduct** with AI



# Suggestions

## 1. At national level,

- Member states governments are recommended **to establish a national committee of responsible conduct with AI**, with multiple stakeholders engagement, to lead the establishment of ethical consensus.

## 2. At international level,

- UN should strengthen its leadership in **international dialogues**, and mobilize the treaty of ***Restrictions on Development of Artificial Intelligence Weapons*** and preventing malicious usage by terrorism.

## 3. At public level,

- Wider spread **AI literacy education** should be promoted to raise the public awareness and fostering responsible conduct with AI



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**Thanks for your kind attentions  
and  
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Thanks to Chinese Development Research Foundation and Microsoft for their report on “*Foundation for the Future – AI’s role in Society and Ethics*”.

