IFIP IP3 Briefing on
“Artificial Intelligence (AI) Trends”
Session: Cybersecurity in the age of AI

June 15, 2017
UN ITU Headquarters, Geneva
1630–1815 Popov Room 2, ITU Tower
AI Digital Quake

10 MSs’ → $5 T market cap

Mobile/Cloud first → AI first

China $337B

AI top 6 trends

Gartner “perceptual smart machine age” top 3 trends

AI tools, hardware, open source (OpenAI)

FSR summit, $92.7 Trillion, AI key
Data volumes driving AI

Only AI has the power to analyze this data to solve grand challenges and problems guiding our future.

- **2015/16 entire human history**
- **44 ZB in 2020**, 50x 2010
- **26 billion IoT devices in 2020**
“Second Machine Age”

Erik Brynjolfsson  Andrew McAfee

- Dramatic growth driven by smart machines
- Evidence everywhere
The Fourth Industrial Revolution
by Prof Klaus Schwab World Economic Forum;
Subject UBS paper

EXTREME automation, connectivity

Cyber-physical systems driven by AI and robots
AI Impact

Economic, cultural, social... endless disruption

Labour – McKinsey
58% of jobs automated

Martin Ford, Rise of the Robots

Elon Musk, AI...
existential threat
AoE: AI of Everything

Is AI creating a digital quake where > 80 percent of companies and jobs will need to change or fail?

What are the implications to society, economic development, and path to prosperity?

AI technical standards achieve SDGs?
AI Driven Unprecedented Era

Hyper time compression
new disruptive innovations

Extreme convergence
of multiple domains

Exponential accelerating automation
– smart sensors and the 26 billion IoT devices by 2020
(11 trillion USD by 2025)

Universal connectivity linked
by a digital AI mesh
AI Driven Unprecedented Era

AI of Everything (AoE)—the global AI mesh spawning a Digital Quake driving the Knowledge Synthesis of Everything (KSE), an inflection point for humankind and the SDGs.
AoE: Evidence

Singapore self-driving Taxis September 2016

Norwegian Telenor Al and Big Data Lab

Deep Knowledge Ventures, AI votes on investments

Baidu, StockMaster predicts market trends

Baidu, AskADoctor, 520 diseases, refers specialists

GE survival on software and AI

Controversy: AI bias
United Nations Sustainable Development Goals (SDGs): affordable, reliable, everywhere, safe, inclusive, fair, equal, resilient, sustainable, all ages
AI’s contributions to SDGs

1. **Zero Poverty**: Map poverty with predictive Big Data analytics.
2. **Zero Hunger**: Increase agricultural productivity.
3. **Good Health and Well-being**: Analyse vast amounts of healthcare data.
4. **Quality Education**: Revolutionize classrooms with individualized learning.
5. **Gender Equality**: Pinpoint gender inequity, drive balanced hiring.
6. **Clean Water and Sanitation**: Improve efficient, clean water provision.
7. **Affordable and Clean Energy**: Improve photovoltaic energy capture.
8. **Decent Work and Economic Growth**: Increase productivity through intelligent automation.
9. **Industry, Innovation and Infrastructure**: Build a more inclusive society (e.g., disability robotics).
10. **Reduced Inequalities**: Help drive industry innovation.
11. **Sustainable Communities**: Power urban planning decisions through sensor data.
12. **Responsible Consumption and Production**: Model climate change to predict disasters.
13. **Climate Action**: Predict optimal production levels to reduce waste.
14. **Life on Land**: Outwit poachers and monitor species’ health.
15. **Life below Water**: Track illegal fishing through pattern-recognition software.
16. **Peace Justice and Strong Institutions**: Multi-sectoral collaboration is essential.
17. **Partnerships for the Goals**: Reduce discrimination and corruption in government.

**The United Nations Logo**
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AI and SDGs

Tracking poverty (SDG1)

Diagnosis (SDG3)

Causal influences development programs education (SDG4)

Micro-finance (SDG8)

Greenhouse emissions and smart cities (SDG11&13)

Global partnerships (SDG17)
AI Support Programs

- UN ITU partner
- IBM Watson
- AI XPRIZE

- $5 million prize
- Diverse and open sources
- Solving grand challenges

International standards?

- IEEE ethics, Stanford project “100 Year Study”
- BSI8611 ethics design and application robots
- US Whitehouse 2 AI reports in Oct
- Partnership on AI for People and Society
- 21 UN Agencies & XPRIZE AI FOR GOOD
Cybersecurity and AI Risks

What are the AI applications exposing risk?

- Email filtering: SPAM?
- Personalization: Amazon, Netflix?
- Fraud detection: Credit cards?
- Speech recognition: Chatbots, Robo Advisors?
- Image/video recognition: Airports, Policing, Social Media?
- Autonomous vehicles: Cars, trucks, drones?
- Robots: Factories and Consumer facing?
- Human/machine hybrids: Wearable, embedded?
- CASL – classic, augmented, synthetic Life?
- Data, security, privacy, trust?
Cybersecurity Questions

Do we need IT professionals?
- Who will protect us?
- What are the Cyber risks?
- Who will manage the risks of:
  - AI/ML, IoT, Big Data?

International Standards in trustworthy conduct mitigating risk?

- How do we partner for ethical and trustworthy computing?
- How do we ensure AI for Good?
- Where is AI of Everything providing risk exposure?
- Benefit of IoT without the risk?
- Economy grow through safe e-commerce?
Discussions on AI

- ACM Learning Center
- IDG-IT World
- ICSE 2016
Resources

Discussions with over 1000 experts, most here: http://bit.ly/1mbO2MG

Computing Educators Oral History Project
http://www.southwestern.edu/departments/mathcompsci/OHProject/other-ohprojects.html
WE CALL FOR GLOBAL COOPERATION

AI can help solve humanity’s grandest challenges

THANK YOU
Appendix: Added information

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