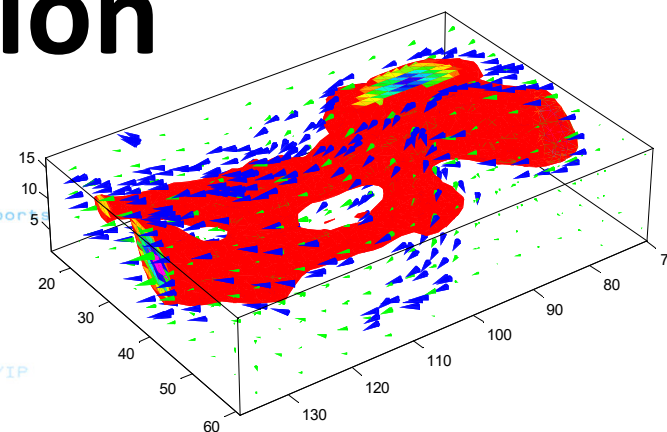




Introduction to Artificial Intelligence

- 01-05 An Introduction



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21/Feb/2024

Chapter Contents

1. Definition of Artificial Intelligence

2. History of artificial intelligence

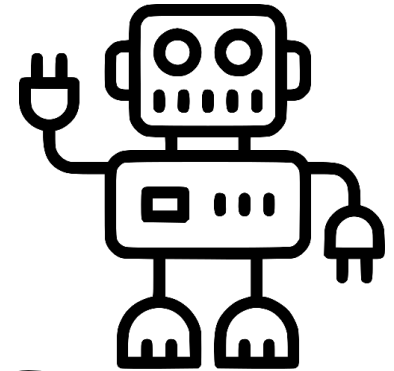
3. Key Drivers and Enablers

4. Related Concepts

5. National Importance and Strategies

6. Applications

7. AI Ethics



- **Class Discussions**
- **Reading List**
- **FAQ**
- **Appendix**
- **Reference**

Sectional Contents

- **Why AI is a National Importance**
- What is AI policy
- What are the key aspects of AI policy
- AI policy's 10 categories
- Key Takeaways
- An Overview of National AI Strategies
- Artificial Intelligence Index Report

Why AI is a National Importance

- **Social Impact:** Personalizes user experiences, transforms social media interactions.
- **Educational Impact:** Enables tailored learning, reduces administrative teaching burdens.
- **Economic Impact:** Drives productivity, potentially automates and displaces human jobs.
- **Technological Impact:** Fuels advancements in robotics, IoT, and data analytics.

Why AI is a National Importance

- **Environmental Impact:** Assists in environmental monitoring, improves resource management.
- **Policy Impact:** Requires new governance for privacy, security, ethical use.
- **Health Impact:** Enhances diagnostic accuracy, customizes treatments, manages health data.

Why AI is a National Importance

- **Ethical** Impact: Decision-making, fairness, accountability, and transparency considerations.
- **Cybersecurity** Impact: Enhancing defenses, detecting threats, and protecting data.
- **Legal** and Regulatory Impact: Intellectual property, liability, and governance challenges.
- **Cultural** and Diversity Considerations: Avoiding biases, promoting inclusivity, and mitigating discrimination.

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What is AI policy?^[57]

- AI policy is defined as public policies that **maximise the benefits** of AI, while **minimising its potential costs and risks**.
- From this perspective, the **purpose** of AI policy is **two-fold**:
 - 1) Governments should **invest** in the development and adoption of AI to **secure** its many **benefits** for the **economy** and **society**.

What is AI policy?

- ✓ *Governments can do this by **investing** in fundamental and applied research, the development of **specialised** AI and “**AI + X**” talent, digital infrastructure and related technologies, and programs to help the private and public sectors adopt and apply new AI technologies.*

What is AI policy?

2) Governments need to also **respond** to the economic and societal **challenges** brought on by advances in AI.

- ✓ *Automation, algorithmic bias, data exploitation, and income inequality are just a few of the many **challenges** that governments around the world need to develop **policy solutions** for. These policies include **investments** into **skills development**, the creation of new **regulations** and **standards**, and targeted efforts to **remove bias** from AI algorithms and data sets.*

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What are the key aspects of AI policy?

- AI policy changes **from country to country**. Depending on a country's national strengths and weaknesses, a government will choose to focus on different aspects of AI policy.
- Despite these differences, AI policy can essentially be broken down into the following **10 categories**:

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AI policy's 10 categories

- 1. Basic and Applied Research
- 2. Talent Attraction, Development, and Retainment
- 3. Future of Work and Skills
- 4. Industrialization of AI Technologies
- 5. AI in the Government
- 6. Data and Digital Infrastructure
- 7. Ethics
- 8. Regulations
- 9. Inclusion
- 10. Foreign Policy

Key Takeaways

- AI policy is about **maximising** AI's many benefits for our economy and societies, while **minimising** its risks and harms.
- **Technological advancement** in AI can only partially explain the sudden interest in AI policy. Governments are also keenly aware of the limited supply of **AI talent** and **investment** and are trying to get ahead of the new challenges caused by AI.

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Key Takeaways

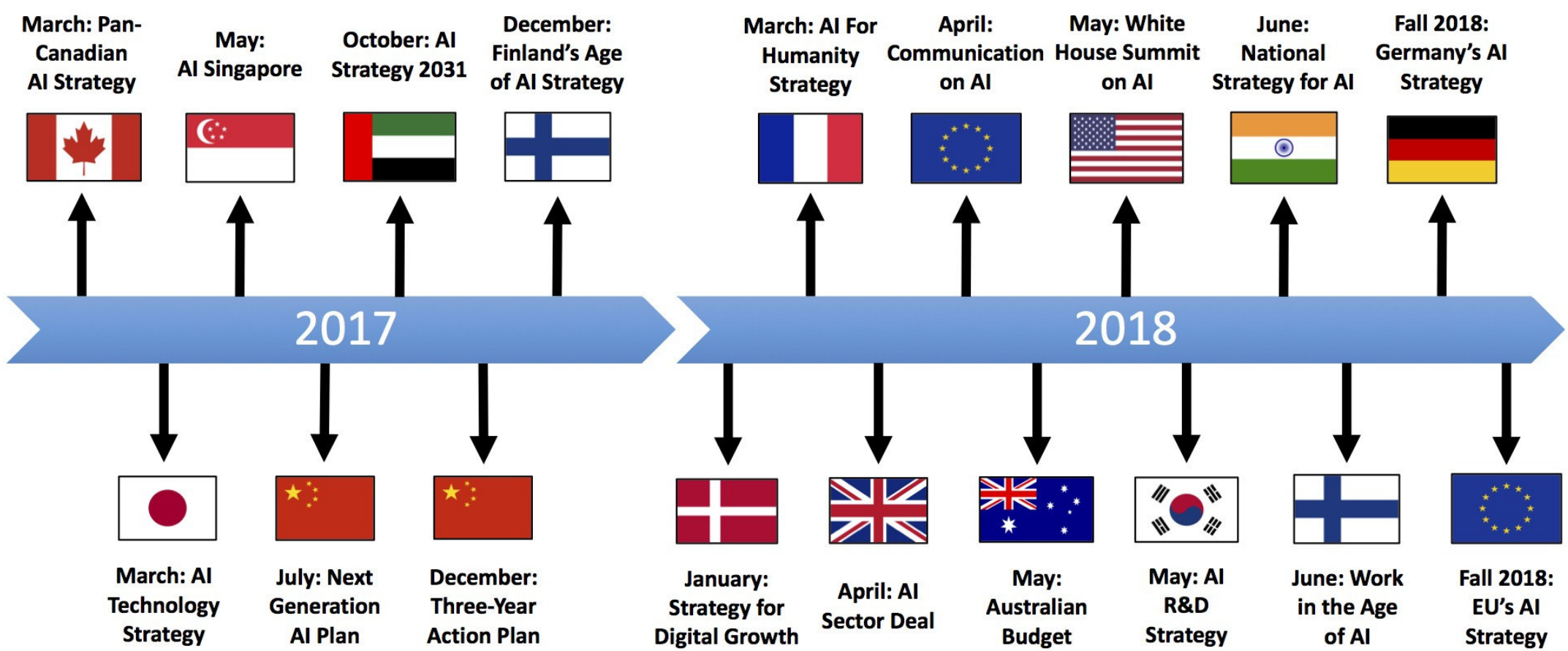
- Governments in all regions of the world are **experimenting** with AI policy.
- Currently, there is **no best practice** since the field is so new.

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An Overview of National AI Strategies^[58]

National Artificial Intelligence Strategies



世界各国人工智能政策与执行机构

国家	时间	政策/规划	推动力量	资金投入
美国	2016 年 11 月	《为人工智能的未来做准备》	国家科学技术委员会	12 亿美元
		《国家人工智能研究与发展战略规划》	白宫科技政策办公室	
		《人工智能、自动化与经济报告》	国家预算办公室	
	2018 年 5 月	白宫人工智能峰会	人工智能特别委员会等	——
中国	2015 年 5 月	《中国制造 2025》	国务院、科技部等	——
	2016 年 8 月	《“十三五”国家科技创新规划》	人工智能规划推进办公室	——
	2017 年 7 月	《新一代人工智能发展规划》	人工智能战略咨询委员会等	——
日本	2015 年 1 月	《机器人新战略》	人工智能技术战略会议等	1000 亿日元
	2017 年 3 月	《人工智能技术战略》		924 亿日元
印度	2018 年 6 月	《国家人工智能战略》	中央部门成立人工智能小组	——
欧盟	2014 年	《2014-2020 欧洲机器人技术战略》	欧盟委员会	28 亿欧元
	2018 年 4 月	《欧盟人工智能》	欧洲机器人技术平台等	——
德国	2014 年	《新高科技战略》	联邦教育研究部	110 亿欧元
	2018 年 7 月	《联邦政府人工智能战略要点》	德国工程研究院等	——
法国	2013 年	《法国机器人发展计划》	法国数字委员会	1500 万欧元
	2017 年 3 月	《国家人工智能战略》	国家信息与自动化研究所	2500 万欧元
	2018 年 5 月	《人工智能战略》	AI 伦理委员会等	15 亿欧元
英国	2016 年 10 月	《机器人技术和人工智能》	英国 AI 理事会	——
	2016 年 11 月	《人工智能：未来决策的机会与影响》	国家人工智能研究中心	——
	2017 年 10 月	《在英国发展人工智能》	工程和物理科学委员会	——
	2018 年启动	《人工智能行业新政》	开放数据研究所等	10 亿欧元
韩国	2016 年 3 月	《人工智能“BRAIN”计划》	韩国科技信息通信部	——
	2018 年 5 月	《人工智能发展战略》	韩国电子通信研究院等	——

China

- A Next Generation Artificial Intelligence Development Plan
- Three-Year Action Plan to Promote the Development of New-Generation Artificial Intelligence Industry

China

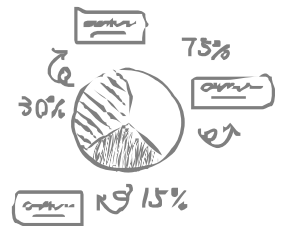
国务院于2017年7月20日发布《**新一代人工智能发展规划**》(以下简称:《发展规划》),“抢抓人工智能发展的重大战略机遇,构筑我国人工智能发展的先发优势,加快建设创新型国家和世界科技强国”。

《发展规划》具体地指出了我国的目标是:

- 到**2020**年,人工智能产业成为新的重要经济增长点,规模超过1500亿元;
- 到**2025**年,力争达到国际领先水平的领域包括新一代信息技术、机器人、节能汽车等,人工智能核心产业规模超过4000亿元;
- 到**2030**年,人工智能理论、技术与应用总体达到世界领先水平,成为世界主要人工智能创新中心。

United Kingdom (UK)

- **EPSRC:** AI + Manufacturing + Robotics and Autonomous Systems
- **UKRI:** 'AI+' fundamental and applied research
- National Productivity Investment Fund (**NPIF**)
- **Industrial Strategy Challenge Fund:** Manufacturing and future materials + Robots for a safer world
- **UK Digital Strategy:** AI a priority in UK's digital strategy
<https://www.gov.uk/government/publications/uk-digital-strategy>
- **AI is a priority for UK fintech start-ups**
- **The Alan Turing Institute:** AI for Science and Government & Social Science



United Kingdom (UK)

- **AI review: Transforming our world with AI^[62] - Long-term potential**
 - AI has the potential to have a profound effect on the economy and in addressing national and global challenges.
 - It is estimated that leading countries could gain an extra 20-25% of economic growth and productivity through AI over the next decade.



United Kingdom (UK)

- Artificial Intelligence Sector Deal
- AI in the UK: ready, willing and able?

National AI Strategy

The UK's national strategy for AI, published in late 2021, notably made multiple references to AI safety and the long-term risks posed by misaligned AGI.



United States (US)

- Preparing for the Future of Artificial Intelligence
- National Artificial Intelligence Research and Development Strategic Plan
- Artificial Intelligence, Automation, and the Economy
- President's approach to AI

EU Commission

- [Communication on Artificial Intelligence](#)
- European AI Alliance
- [High-Level Group on Artificial Intelligence](#)

Canada

- [Pan-Canadian Artificial Intelligence Strategy](#)
- [Canadian Institute for Advanced Research](#)
- three new AI Institutes: the [Alberta Machine Intelligence Institute](#) (AMII) in Edmonton, the [Vector Institute](#) in Toronto, and [MILA](#) in Montreal

Australia

- [Australia 2030: Prosperity Through Innovation](#)

United Arab Emirates (UAE)

- [UAE government launched its AI strategy](#)
- [UAE Centennial 2071 Plan](#)

Denmark

- Denmark's [Strategy for Denmark's Digital Growth](#)

Sweden

National Approach for Artificial Intelligence

Singapore

- AI Singapore
- three new initiatives on AI governance and ethics

Russia

- Artificial Intelligence: Problems and Solutions — 2018
- Ministry of Defence released [a list of 10 policie](#)

Japan

- Public-Private Dialogue towards Investment for the Future
- Artificial Intelligence Technology Strategy
- Japan's Society 5.0

Italy

- [Artificial Intelligence: At The Service of Citizens](#)
- [CINI-AIIS Lab](#) (Artificial Intelligence and Intelligent Systems Lab)

India

- National AI strategy

Germany

- Outlines the goals of the strategy
- integrating AI technologies into Germany's export sectors
- Industry 4.0
- smart services
- report on the ethics of autonomous vehicles

France

- France's €1.5 billion plan
- AI for Humanity Summit
- For a Meaningful Artificial Intelligence: Towards a French and European Strategy

Finland

- [Finland's Age of Artificial Intelligence](#)
- [Finnish Centre for AI](#) (a joint partnership by Aalto and Helsinki Universities to increase AI research, talent, and industry collaboration)
- An AI accelerator pilot program
- the integration of AI in the public service.
- A second interim report, [Work in the Age of Artificial Intelligence](#)

Ireland

AI - Here for Good: A National Artificial Intelligence Strategy for Ireland

Strand 1: AI and Society

Strand 2: A Governance Ecosystem That Promotes Trustworthy AI

Strand 3: Driving Adoption of AI in Irish Enterprise

Strand 4: AI Serving the Public

Strand 5: A Strong AI Innovation Ecosystem

Strand 6: AI Education, Skills and Talent

Strand 7: A Supportive and Secure Infrastructure for AI

Strand 8: Implementation of the Strategy

Artificial Intelligence Index Report 2021^[59]

<https://aiindex.stanford.edu/report/>

- CHAPTER 1 Research and Development
- CHAPTER 2 Technical Performance
- CHAPTER 3 The Economy
- CHAPTER 4 AI Education
- CHAPTER 5 Ethical Challenges of AI Applications
- CHAPTER 6 Diversity in AI
- CHAPTER 7 AI Policy and National Strategies

Artificial Intelligence Index Report 2022^[59]

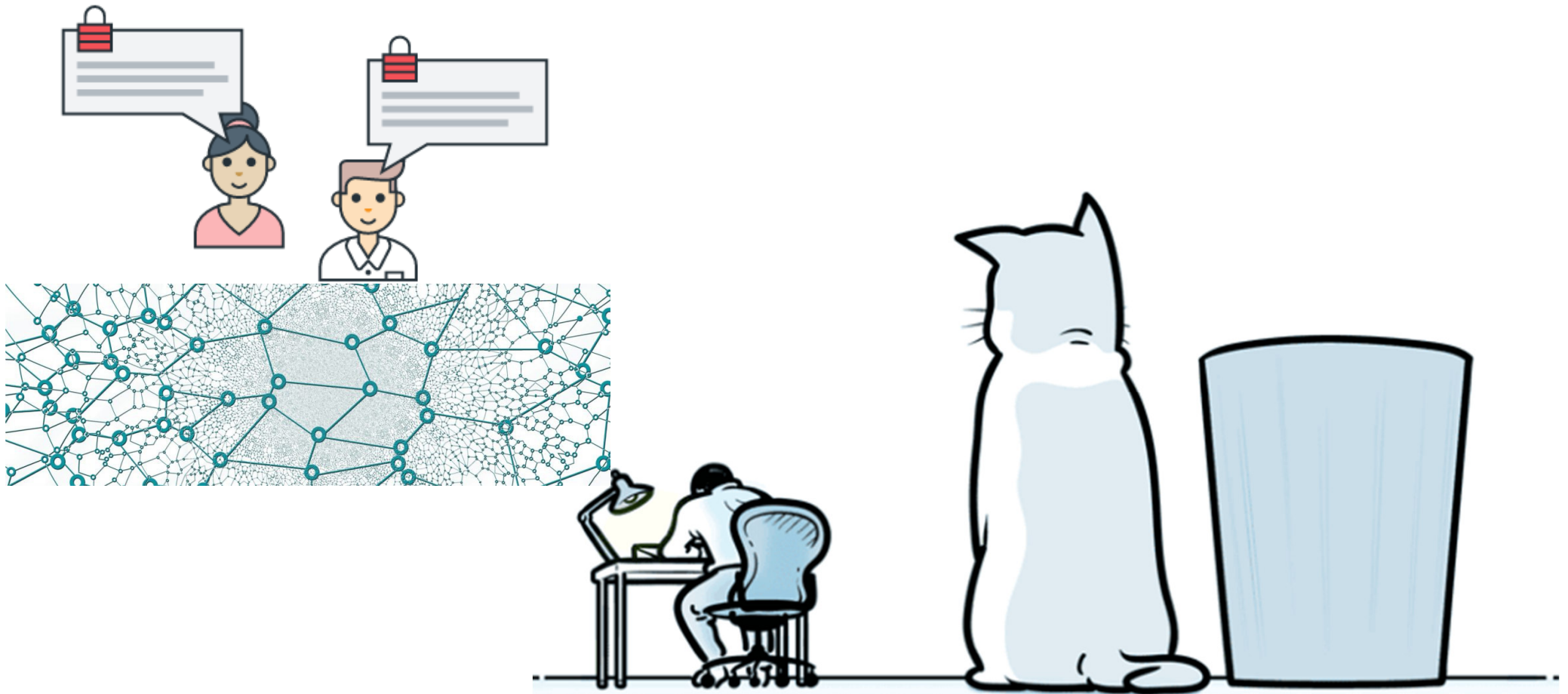
<https://aiindex.stanford.edu/report/>

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Thanks and Questions





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Thanks and Questions