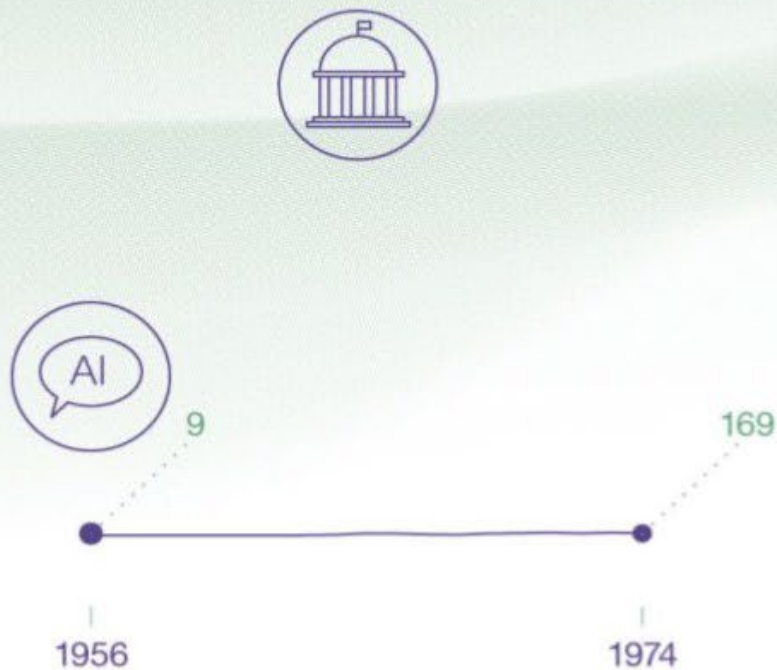


The Story of AI in Patents

Zhiqi Pang

1. Introduction

Growth in AI patent applications plus historical milestones

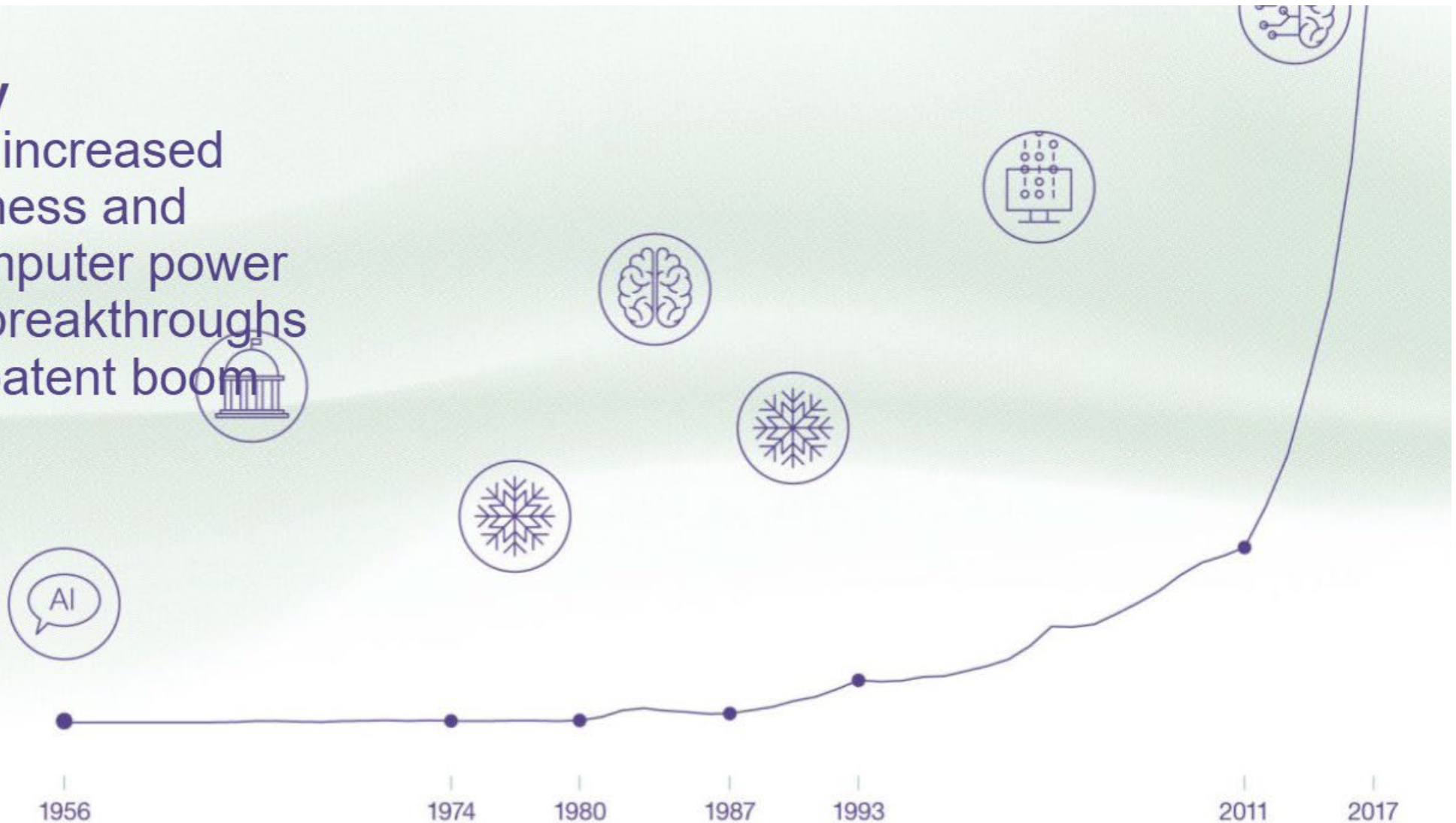


1956
First mention of
the term "AI"

Evolution of AI and Patents

2012-today

More data, increased connectedness and greater computer power bring new breakthroughs and an AI patent boom



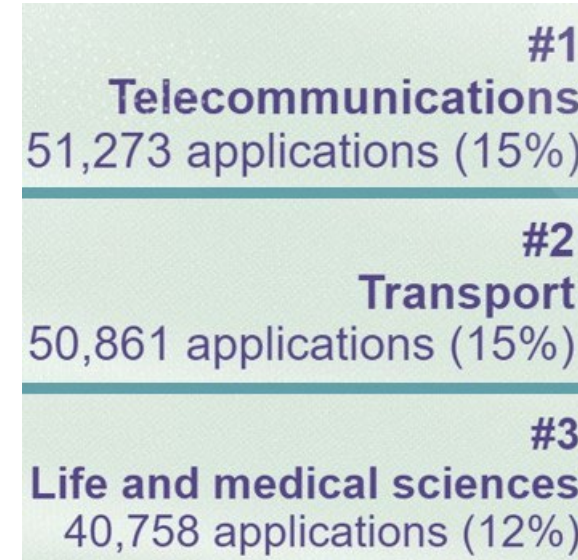


Key Findings

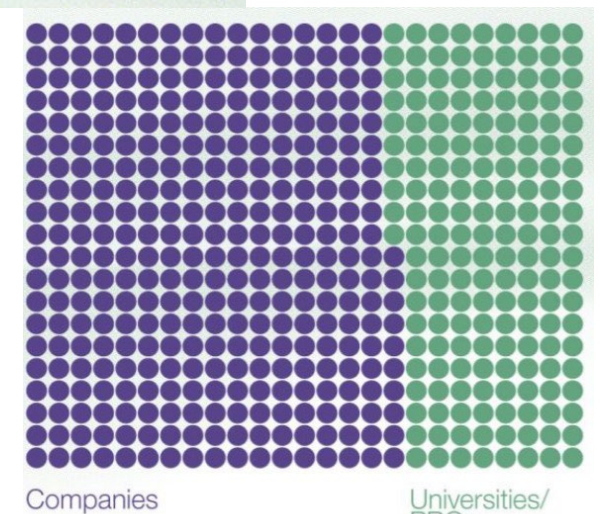
- 1. History and Growth of AI:** Since the 1950s, the field of AI has produced 1.6 million scientific publications and close to 340,000 patent applications for AI-related inventions.
- 2. Main Technologies:** Machine learning, particularly deep learning and neural networks, is driving the AI revolution.
- 3. Practical Application Case Study:**
 - Machine learning and perfumery at Symrise
 - Using speech processing to turn radio discussions into policy data In Uganda
 - Saving lives with AI telecoms technology
 - Smarter farming using a Microsoft AI system

Impact of AI in Industries Globally

- 1. Industry Applications:** Telecommunications, transport, life, and medical sciences, among others.
- 2. Global Impact:** AI is transforming businesses and academic organizations worldwide.
 - Companies make up **333** of the top 500 AI patent.
 - The leading company is **IBM**.



Top 500 AI patent applicants



Challenges Faced

- 1.Data Ownership and Privacy:** The use of AI raises issues of data ownership and privacy.
- 2.Safety and Superintelligence:** The possibility of superintelligence brings new safety challenges.
- 3.Impact on Jobs:** AI may have an impact on a variety of occupations.

Conclusions and Outlook

- 1.Expert Opinions:** Quote views of AI experts to supplement facts of the research from a humanistic perspective.
- 2.Future Outlook:** Briefly discuss future trends in AI development and possible impacts.

"Science contributes to the development of AI technology, but the role played by the private sector increases over time as it obtains IP rights over inventions."

Kazuyuki Motohashi, University of Tokyo

Data privacy and ethics

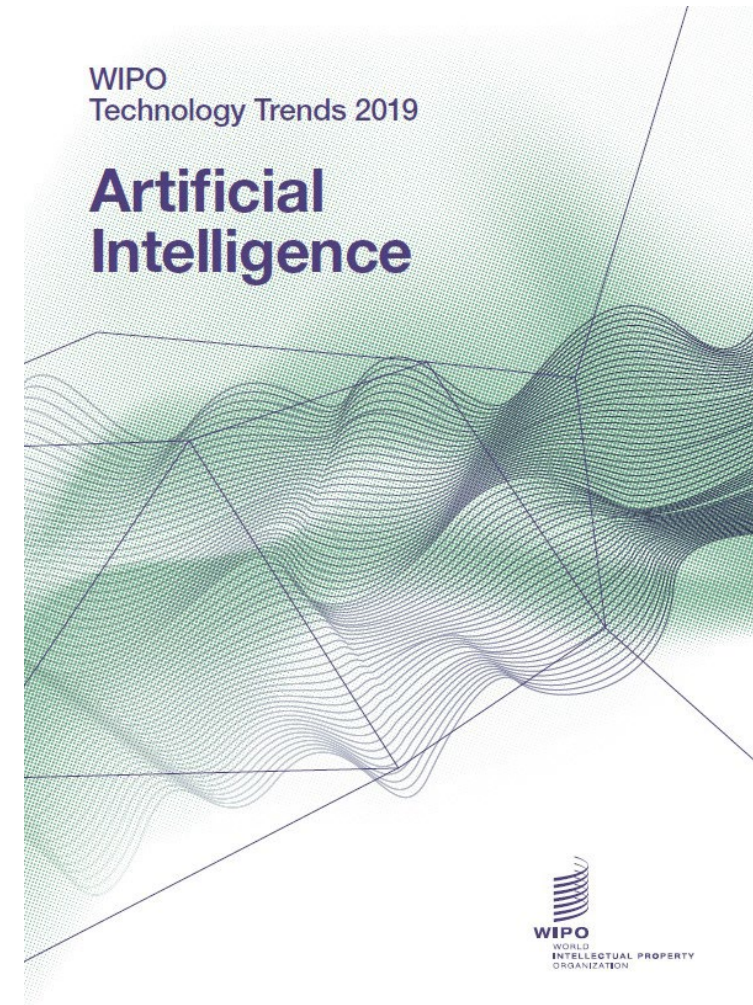
- Free access to data can provide great, personalized experiences, but how open is too open?
- How can we ensure that citizens retain control over their personal information?

"Machine superintelligence would be a watershed moment: it would be the most important invention ever."

Nick Bostrom, Future of Humanity Institute

2. Process of Creating the Report

- The report was created by **the World Intellectual Property Organization (WIPO)**, an international organization responsible for promoting and protecting intellectual property rights.
- The data used in the report was sourced from the **Questel Orbit Patent** database and the Elsevier **Scopus** scientific publication database.
- The data was processed using **statistical** and **classification** methods to analyze trends and identify key insights.
- The report does not explicitly mention the tools used for data analysis



3. Message and Take-aways

1

The report highlights the rapid development of AI innovation, with 50% of AI patents being filed in the last five years alone.

2

It explores various AI technologies such as machine learning, deep learning, neural networks, and computer vision, along with their applications in different sectors.

3

The data supports the significance of AI across industries, including telecommunications, transportation, life and medical sciences, and personal devices and human-computer interaction.

4

Policy implications and challenges related to data regulation, research incentives, intellectual property protection, and ethical AI development are also addressed.

4. Strengths of Analysis & Visualizations

1. Impressive Data Collection:

- Utilized the Questel Orbit patent database and the Elsevier Scopus scientific publication database.

2. Robust Analysis Methods:

- Applied statistical and classification methods to analyze the data, uncovering trends, patterns, and correlations within the AI patent landscape.
- Provided valuable insights into the growth, distribution, and areas of focus within AI innovation.

3. Effective Visualizations:

- Employing visual representations such as charts, graphs, and maps.
- Conveying key findings, trends, and relationships, making it easier for the audience to grasp the information.

4. Interesting and Exciting Observations:

- Highlights the dominance of machine learning patents.
- The rapid growth of deep learning and neural networks.
- The popularity of computer vision applications in various industries.

5. Critique the Weakness - 1

Potential Issues in Data Collection and Analysis

Data collection limitations: Biases in the Questel Orbit patent database and Elsevier Scopus scientific publication database. Lack of explicit acknowledgment of these limitations in the report.

Data Representativeness: The data may not represent all AI-related inventions or scientific publications globally.

Analysis limitations: The report overlooks other sources of AI innovation, like open-source projects, industry reports, or unpublished research.

Quality vs. Quantity: There may be an overemphasis on the volume of patents and scientific publications, rather than the impact or quality of these innovations.

Suggestions for Improvement

- **Diversify data sources:** Incorporate more diverse data sources to get a comprehensive view of AI innovation.
- **Address data limitations:** Openly discuss the limitations and biases of the data sources used.
- **Improve analysis:** Consider the quality or significance of patents and scientific publications, not just the quantity.

5. Critique the Weakness - 2

Visualization and Interpretation Challenges

- Visualization clarity and aesthetics: The report could improve the clarity and visual appeal of the graphs and charts.
- Need for context: Some visualizations could use more labels or annotations to enhance understanding.
- Lack of methodology explanation: A detailed methodology section explaining the visualization techniques used would be beneficial.
- Limited discussion on implications: The report lacks a thorough discussion on the potential implications of the findings and actionable recommendations based on the analysis.

Suggestions for Improvement

- Enhance visualization design: Add more labels and contextual information to the graphics for clarity.
- Explain visualization techniques: Provide a detailed explanation of the visualization techniques used.
- Provide actionable insights: Discuss implications of the findings and offer actionable recommendations.
- Address socio-economic and ethical implications: Enhance the depth of the report's conclusions by discussing these aspects.

Reference

- World Intellectual Property Organization. (2019). Artificial Intelligence: Patents. WIPO Technology Trends. Retrieved from https://www.wipo.int/tech_trends/en/artificial_intelligence/story.html

THANK YOU