Preview

ACCESS THE PUBLIC DATA

Chapter Highlights

1. Industry continues to dominate frontier AI research. In 2023, industry produced 51 notable machine learning models, while academia contributed only 15. There were also 21 notable models resulting from industry-academia collaborations in 2023, a new high.

2. More foundation models and more open foundation models. In 2023, a total of 149 foundation models were released, more than double the amount released in 2022. Of these newly released models, 65.7% were open-source, compared to only 44.4% in 2022 and 33.3% in 2021.

3. Frontier models get way more expensive. According to AI Index estimates, the training costs of state-of-the-art AI models have reached unprecedented levels. For example, OpenAI's GPT-4 used an estimated $78 million worth of compute to train, while Google's Gemini Ultra cost $191 million for compute.

4. The United States leads China, the EU, and the U.K. as the leading source of top AI models. In 2023, 61 notable AI models originated from U.S.-based institutions, far outpacing the European Union's 21 and China's 15.

5. The number of AI patents skyrockets. From 2021 to 2022, AI patent grants worldwide increased sharply by 62.7%. Since 2010, the number of granted AI patents has increased more than 31 times.

6. China dominates AI patents. In 2022, China led global AI patent origins with 61.1%, significantly outpacing the United States, which accounted for 20.9% of AI patent origins. Since 2010, the U.S. share of AI patents has decreased from 54.1%.

7. Open-source AI research explodes. Since 2011, the number of AI-related projects on GitHub has seen a consistent increase, growing from 845 in 2011 to approximately 1.8 million in 2023. Notably, there was a sharp 59.3% rise in the total number of GitHub AI projects in 2023 alone. The total number of stars for AI-related projects on GitHub also significantly increased in 2023, more than tripling from 4.0 million in 2022 to 12.2 million.

8. The number of AI publications continues to rise. Between 2010 and 2022, the total number of AI publications nearly tripled, rising from approximately 88,000 in 2010 to more than 240,000 in 2022. The increase over the last year was a modest 1.1%.

1.1 Publications

Overview

The figures below present the global count of English-language AI publications from 2010 to 2022, categorized by type of affiliation and cross-sector collaborations. Additionally, this section details publication data for AI journal articles and conference papers.

Total Number of AI Publications[1]

Figure 1.1.1 displays the global count of AI publications. Between 2010 and 2022, the total number of AI publications nearly tripled, rising from approximately 88,000 in 2010 to more than 240,000 in 2022. The increase over the last year was a modest 1.1%.

Number of AI publications in the world, 2010–22

Source: Center for Security and Emerging Technology, 2023 | Chart: 2024 AI Index report

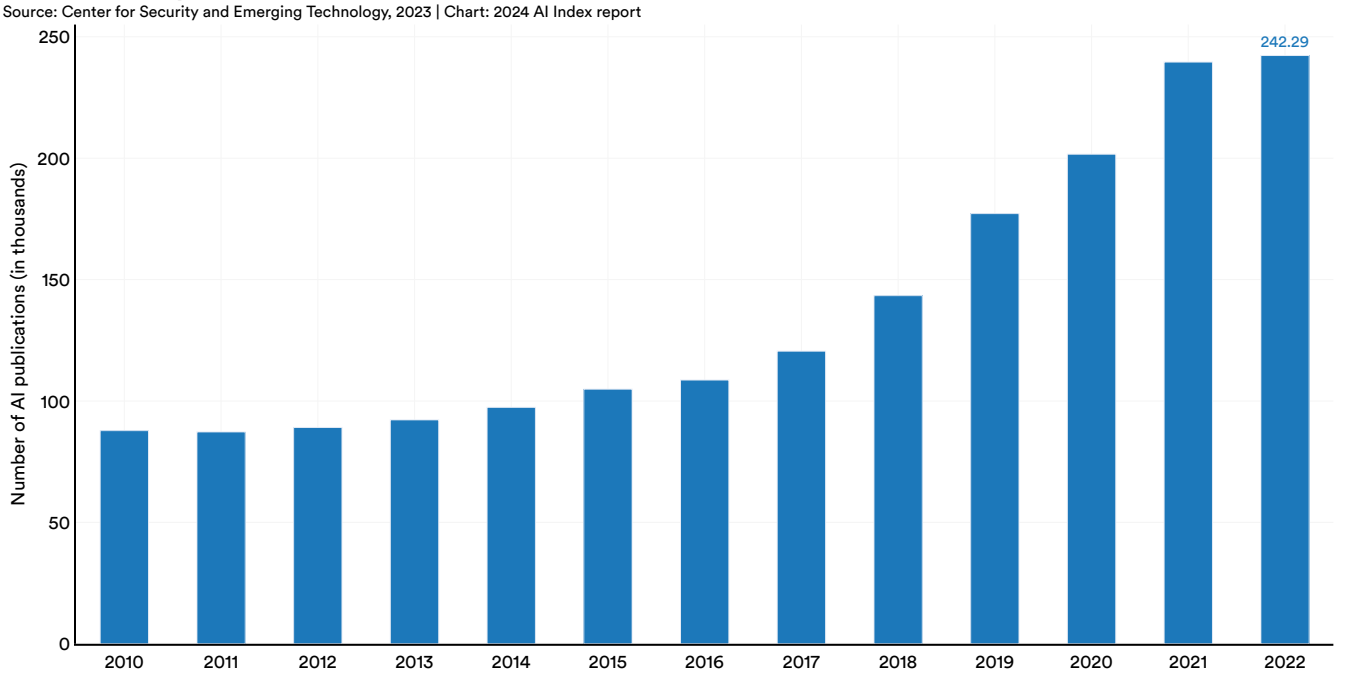

Figure 1.1.1

1 The data on publications presented this year is sourced from CSET. Both the methodology and data sources used by CSET to classify AI publications have changed since their data was last featured in the AI Index (2023). As a result, the numbers reported in this year's section differ slightly from those reported in last year's edition. Moreover, the AI-related publication data is fully available only up to 2022 due to a significant lag in updating publication data. Readers are advised to approach publication figures with appropriate caution.