Chapter Preview

Chapter 7: Public Perception

[Table_of_Contents]
[Public_Perception_Technical_Appendix]

Central Banks

Central banks around the world demonstrate a keen interest in AI, especially for its ability to predict geopolitical and macroeconomic conditions, and better understand the regulatory and policy environment. The first chart below plots the global aggregate document types by central banks across 14 central banks (Figure 7.1a).[24] It shows a significant increase in central bank communications mentioning AI, with a shift from other publications to speeches mentioning AI over time. This more intensive communication reflects greater efforts to understand AI and the regulatory environment as it relates to the macroeconomic environment and financial services. The second chart plots the ranking of central banks based on the total number of AI mentions for the last ten years (Figure 7.1b). The Bank of England, the Bank of Japan, and the Federal Reserve have mentioned AI the most in their communication.

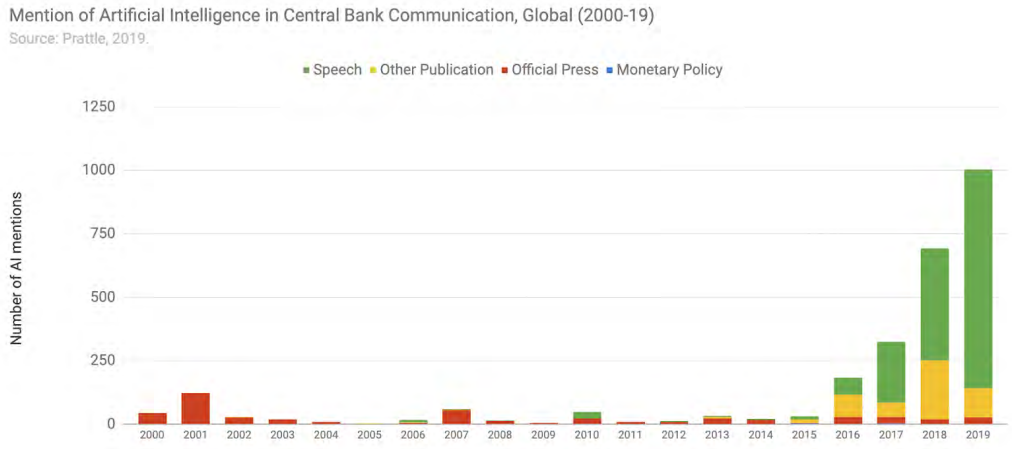

Fig. 7.1a.

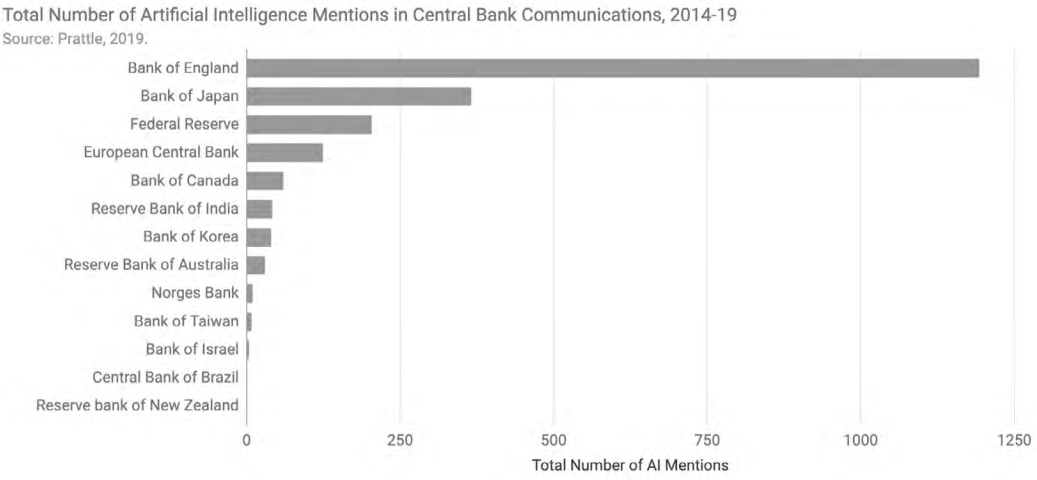

Fig. 7.1b.
Note: The chart represents data with latest data point till Q12019.

"In the last few years, the Bank of England has pursued a clear research agenda around AI as well as the use of blockchain and cryptocurrencies. Other central banks, like the Fed and BOJ, have addressed these topics in speeches, but they are just beginning to structure formal research agendas around AI."
Evan Schnidman, founder and CEO of Prattle

[24]Bank of Canada, Bank of England, Bank of Israel, Bank of Japan, Bank of Korea, Bank of Taiwan, Central Bank of Brazil, European Central Bank, Federal Reserve, Norges Bank, Reserve Bank of Australia, Reserve Bank of India, Reserve Bank of New Zealand, Sveriges Riksbank.

[Public_Perception_Technical_Appendix]
[Access_Data]

US Government Perception

Government officials are paying more attention to AI. The Index partnered with Bloomberg Government to analyze mentions of AI in the US congress. Each data point on the graph refers to one piece of proposed legislation, one report published by a congressional committee, or one report published by the Congressional Research Service (CRS), which serves as a nonpartisan fact-finding organization for US lawmakers, that explicitly references one or more AI-specific keywords. The data shows a greater than ten-fold increase in activity around AI in the 2017-2018 Congress, compared to prior years. More activity can be expected: our preliminary data for the 2019-2020 congress shows a further increase in activity when compared to prior years. With more than a year remaining in its term, the 116th will undoubtedly become the most AI-focused US Congress in history.

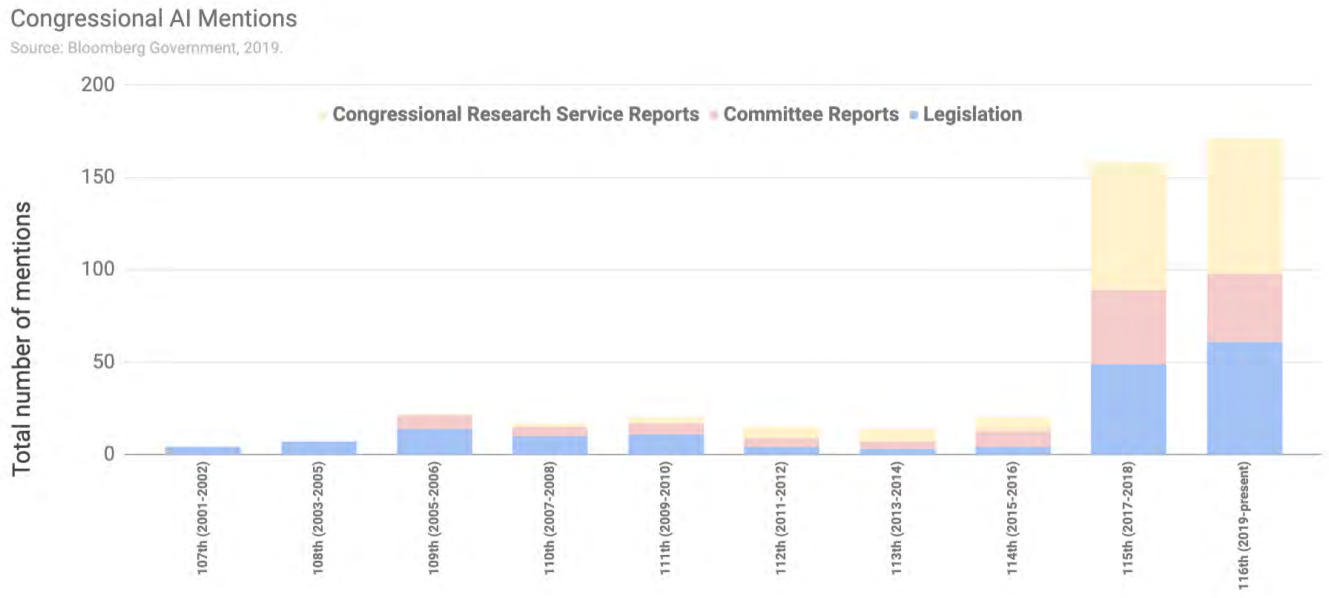

Fig. 7.2.

[Public_Perception_Technical_Appendix]
[Access_Data]

US, Canada, and the UK Government Perception

The next graphs show mentions of the terms 'Artificial Intelligence' and 'Machine Learning' in transcripts of US Congress (Figure 7.3a), the records of proceedings (known as Hansards) of the Parliaments of Canada (Figure 7.3b) and the United Kingdom (Figure 7.3c). Prior to 2016, there were few mentions of artificial intelligence or machine learning in the parliamentary proceedings of each country. Mentions appeared to peak in 2018, and, while remaining significant, have declined in 2019 for Canada and the United Kingdom. In transcripts of the US Congress, 2019 was year of highest AI mentions to date.

Note that it is difficult to make country-to-country comparisons, due to variations in how remarks and comments are counted between each (see Appendix for methodology). Thus, rather than country-to-country comparisons, it would be better to compare trends over time within a country.

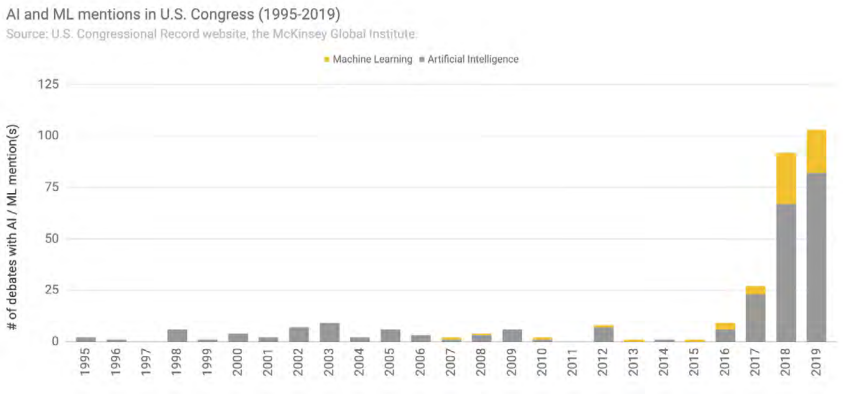

Fig. 7.3a.

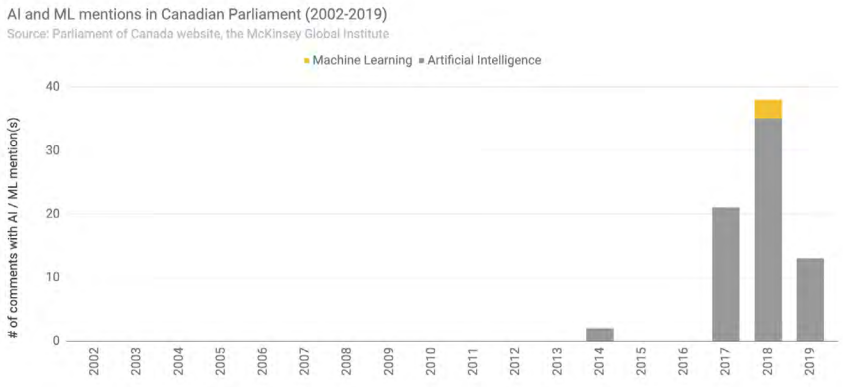

Fig. 7.3b.

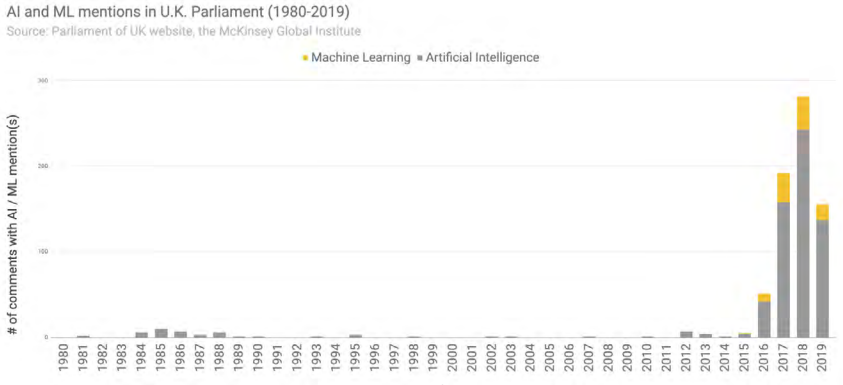

Fig. 7.3c.

[Public_Perception_Technical_Appendix]
[Access_Data]

Corporate Perception

The following earnings calls data includes all 3000 publicly-traded companies in the US, including American Depositary Receipts (ADRs - foreign-listed companies that also trade on a US exchange). The charts below show the individual instances of AI-related terms mentioned on earnings calls (Figure 7.4a). The share of earning calls where AI is mentioned has increased substantially, from 0.01% of total earnings calls in 2010 to 0.42% in 2018.

Total Number of AI mentions in earnings calls

Source: Prattle, 2019.

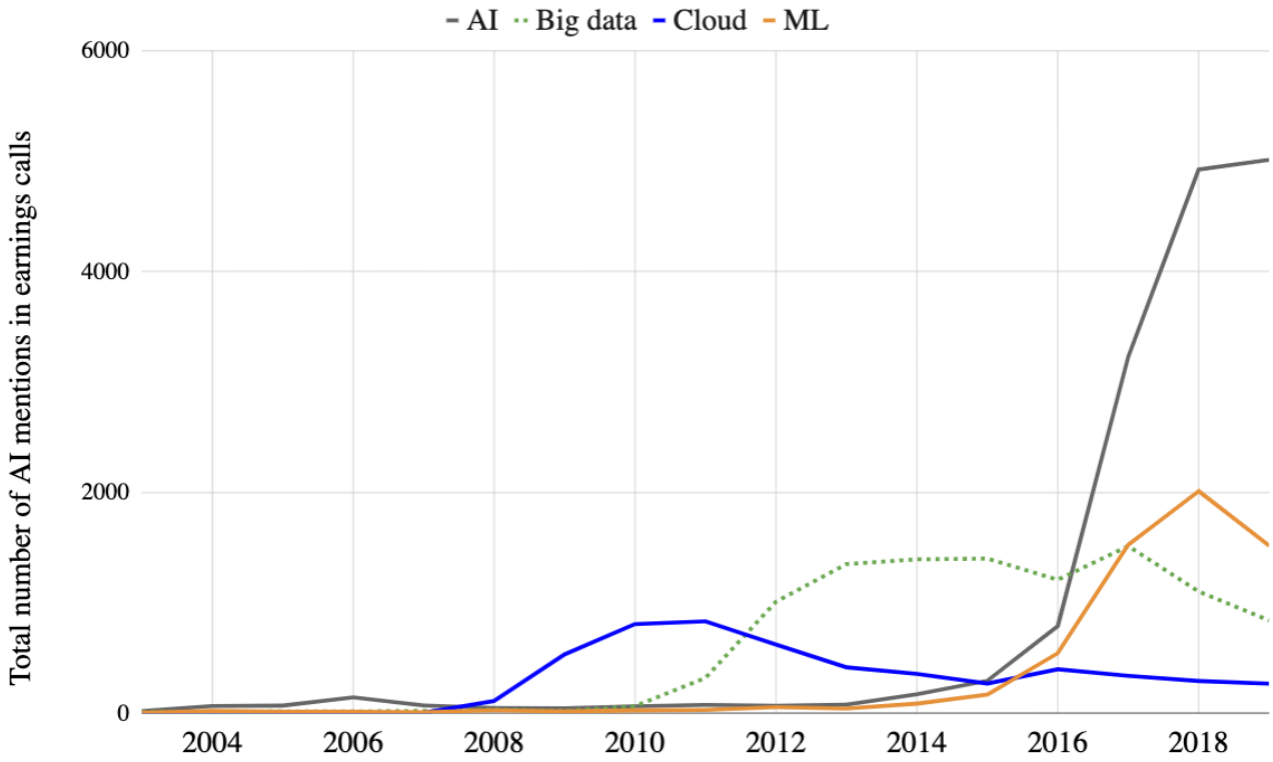

Fig. 7.4a.

[Public_Perception_Technical_Appendix]
[Access_Data]

Corporate Perception

Among sectors, finance has the largest number of AI mentions in earnings calls from 2018 to Q1 of 2019, followed by the electronic technology, producer manufacturing, healthcare technology, and technology services sectors (Figure 7.4b). A normalized view for the mentions of AI relative to total earnings calls is presented in the Appendix chart.

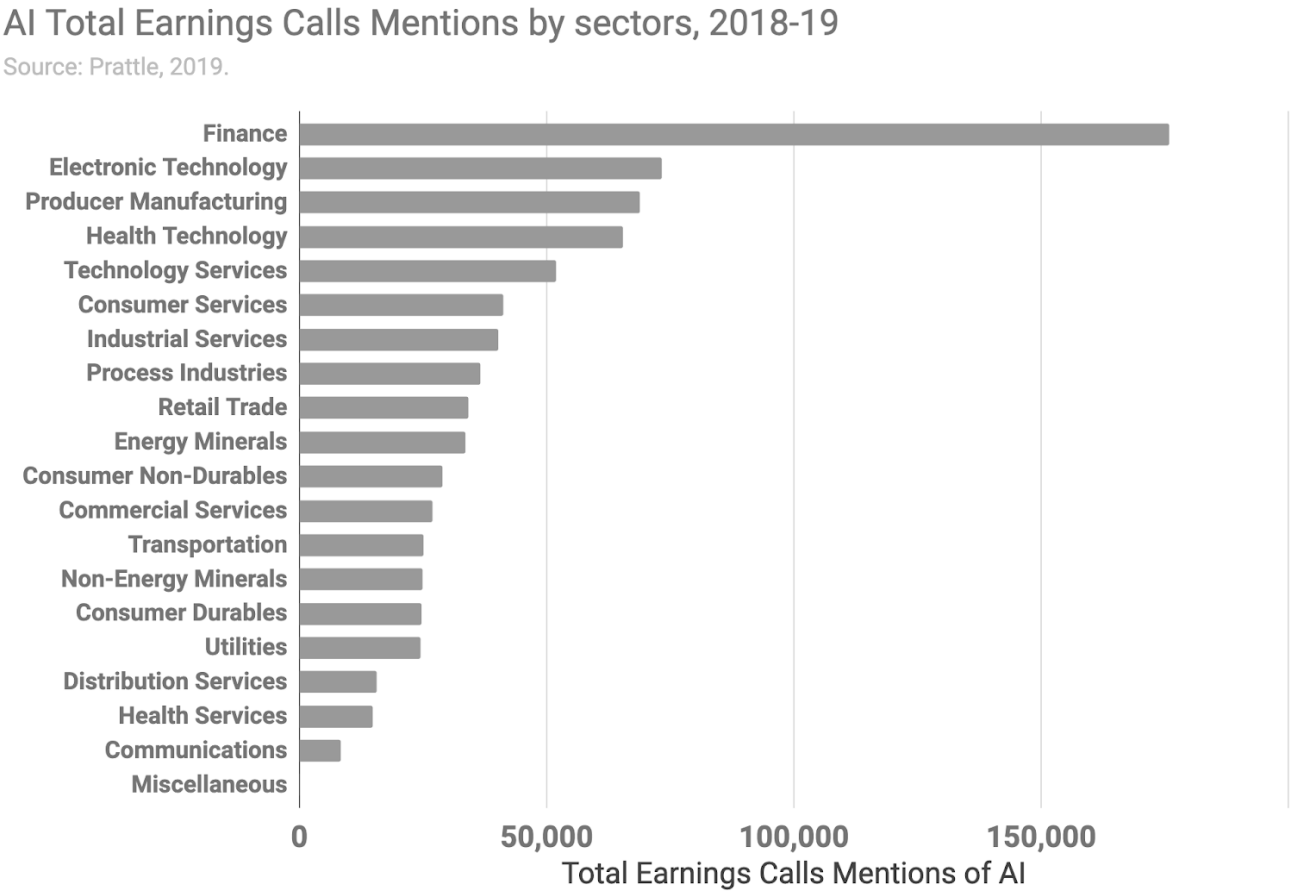

Fig. 7.4b.

[Public_Perception_Technical_Appendix]
[Access_Data]

Web Search and World News

The timeline below shows the relative search interest by month of web searchers in the United States from January 2004 to August 2019 for the phrases "data science," "big data," "cloud computing," and "machine learning" using Google Trends (Figure 7.5a). Google's methodology calculates the time period with the highest amount of searching, then treats that as 100 and scales the rest accordingly.

In this analysis there is an emergence of cloud computing in 2008, which is replaced as the term of art by "big data" which starts taking off in 2011. Machine learning and data science both take off together in 2013, following technical advances in deep learning like the results on the 2012 ImageNet competition.

US search interest for "data science," "big data," "cloud computing" and "machine learning" via Google Trends
Source: Google Trends, GDELT, 2019.

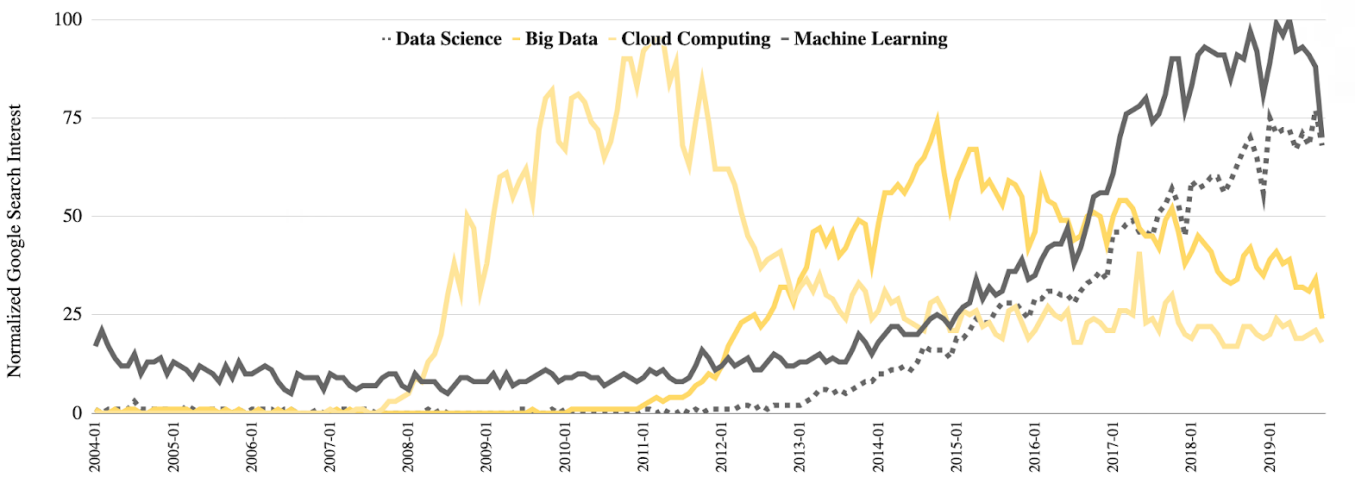

Fig. 7.5a.

Web Search and World News

The timeline below compares some of the terminology used to refer to AI today: "machine learning," "deep learning," "artificial intelligence", as well as the term for the most popular deep learning software, "TensorFlow" (Figure 7.5b). Google's TensorFlow package is now searched just as often as AI and both have been slowly decreasing in search interest since early 2018. After taking off in 2013, deep learning plateaued in late 2017, around the time that searches for machine learning began to slowly level off.

Using data from the GDELT Project, the timeline below shows the percentage of worldwide news coverage in 65 languages monitored by GDELT by day that contain those same four terms since January 1, 2017, using a 7-day rolling average to smooth the data. This graph shows that online news coverage of cloud computing and big data has steadily declined and data science and machine learning have increased. This frequency of queries suggests that "big data" retains its allure as a media term for journalists covering the latest data-driven news, but that in both searches and news coverage, Machine Learning is the term *du jour*.

US search interest for "machine learning," "deep learning," "TensorFlow" and "artificial intelligence" via Google Trends
Source: Google Trends, 2019.

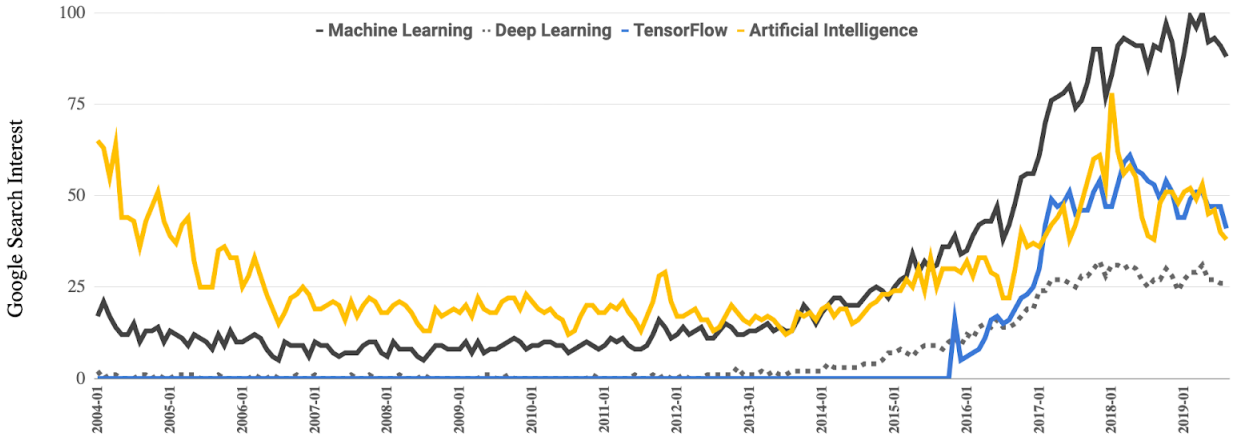

Fig. 7.5b.

Percent of worldwide news coverage monitored by GDELT that mentioned "data science," "big data," "cloud computing" and "machine learning"
Source: GDELT, 2019.

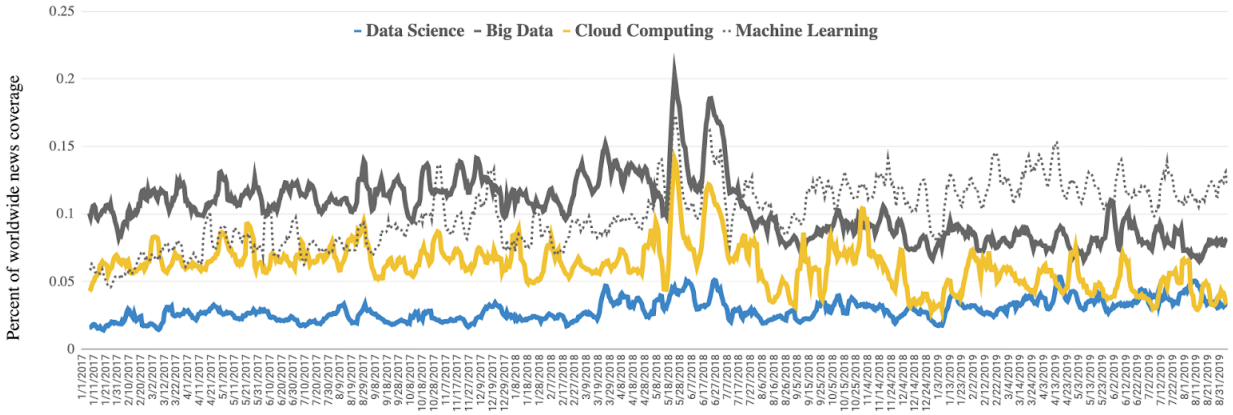

Fig. 7.5c.

Web Search and World News

Looking at online news coverage, the timeline below shows that "Artificial Intelligence" is the clear winner, followed by Machine Learning and deep learning (Figure 7.5d).

When the media covers AI, what does media think AI is influencing? The bar chart below shows the percentage of articles monitored by GDELT containing either "artificial intelligence" or "machine learning" or "deep learning" that also contained either "job" or "jobs" or "employment" or "unemployment," the percentage that contained either "killer robot" or "killer robots" or "autonomous weapon" or "autonomous weapons," and the percentage that contained either "bias" or "biases" or "biased" (Figure 7.5e).

Percent of worldwide news coverage monitored by GDELT that mentioned "machine learning," "deep learning," "TensorFlow" and "artificial intelligence"
Source: GDELT, 2019.

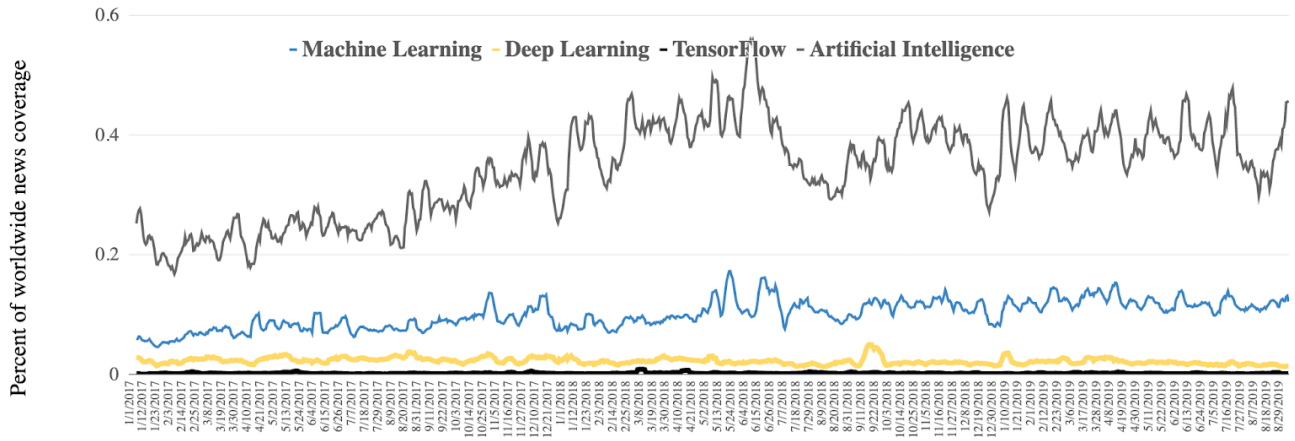

Fig. 7.5d.

Percent of worldwide online news coverage of AI monitored by GDELT that focused on jobs, autonomous weapons or bias.
Source: GDELT, 2019.

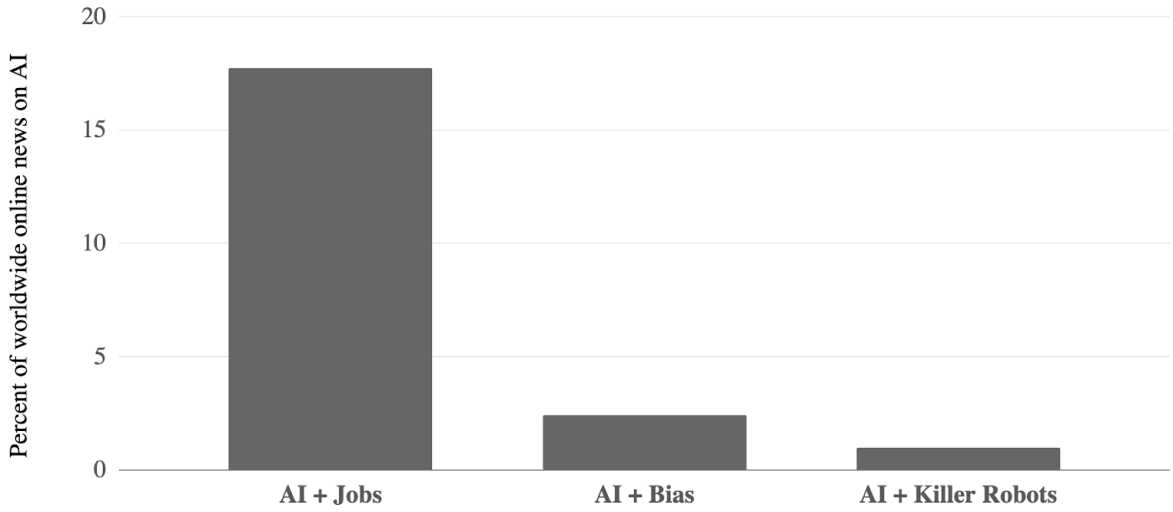

Fig. 7.5e.

Web Search and World News

Articles addressing AI's potential impact on jobs, including concern over the potential for AI to displace human jobs, accounted for 17.7% of all AI-related coverage GDELT monitored over the past two and a half years. Killer robots accounted for just 0.99% and bias issues accounted for just 2.4% of AI discussions (Figure 7.5f).

Percent of worldwide online news coverage of AI monitored by GDELT that focused on jobs, autonomous weapons or bias by day.
Source: GDELT, 2019.

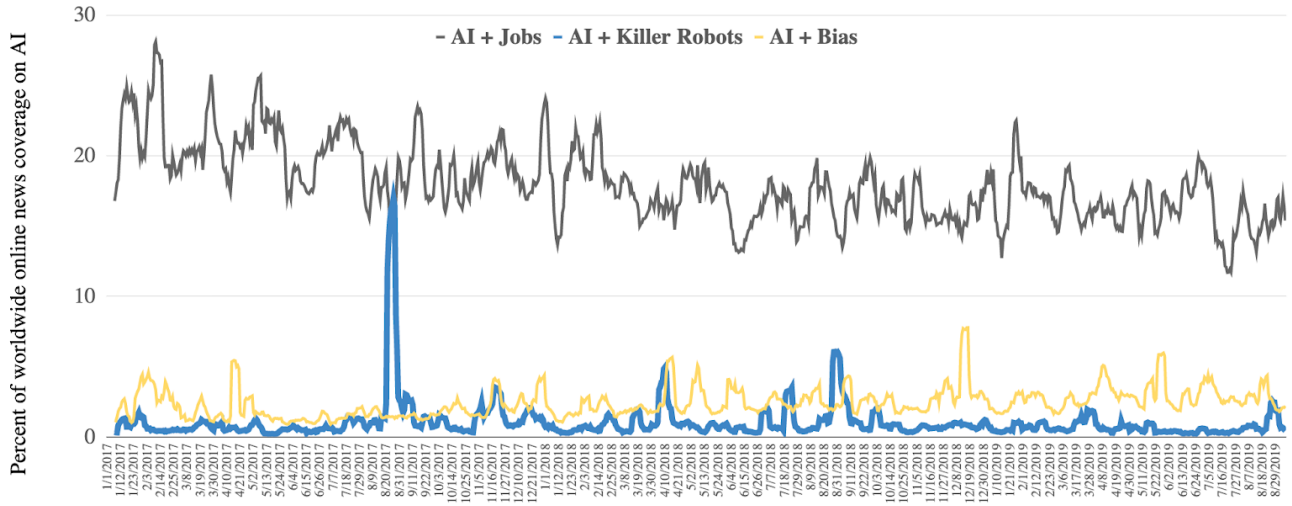

Fig. 7.5f.