CHINA RESEARCH SPOTLIGHT

A new series from East View that highlights Chinese research and resources on key topics.

Rapid Developments in AI Research

In 2014 China surpassed the US in artificial intelligence (AI) research volume. Three years later, in June 2017, China's State Council codified its AI research efforts under the New Generation Artificial Intelligence Development Plan. Since 2017, Chinese research into AI has expanded exponentially. In June 2021 alone, researchers published over 4,700 patents, journal articles, dissertations, and theses about AI. These included patents for AI-based photovoltaics, air filters, forest fire and soil deformation warning systems, and intubation simulators.
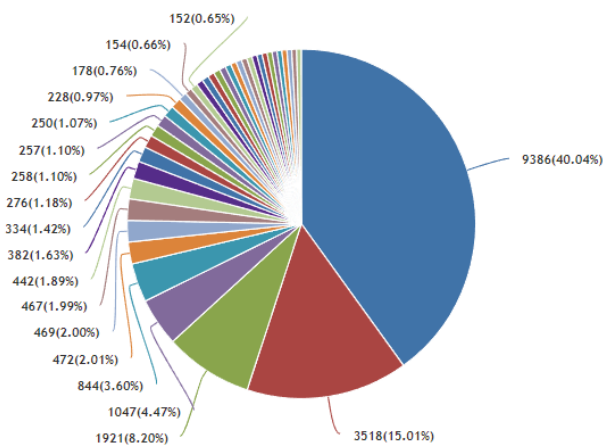
Tracking Chinese AI Research through CNKI

China's central planning structure for academic and research institutions has enabled the creation of a single database into which academicians and scientists produce their R&D output.

This repository aggregator function is known as the China National Knowledge Infrastructure (CNKI). As the central repository for nearly all of China's national STI and R&D academic output, CNKI's databases contain every conceivable area of Chinese emerging technology study (including those under the influence of rapidly developing applied AI).

CNKI contains nearly 167,000 journal articles, 27,000 theses and dissertations, and 37,000 domestic patents related to AI. CNKI also contains over 4,000 AI-related conference proceedings and over 3,000 newspaper articles. All of these resources are available through a single cross-language and cross-database search.

Article metadata on CNKI provide clear takeaways about China's AI research. Between 1983 and 2016, authors published around 52,000 AI-related articles on CNKI. Between 2016 and 2021, they published over 159,000 AI-related articles. AI-related articles on CNKI also tackle robotics, residual static correction, and storage mediums. **The largest funder of these articles is the National Natural Science Foundation of China, which has funded almost 9,300 articles.** Tencent-affiliated authors have published over 3,700 articles on CNKI, consistent with the Center for

Funding sources: As illustrated in the above graph, 40% of Chinese articles about AI have been funded by the National Natural Science Foundation of China.

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Security and Emerging Technology's finding that most of China's AI investment is going to non-military-related research. Three of CNKI's top five most published authors on AI are from Tencent.

As described above, in June 2021 alone, researchers produced over 4,700 publications related to AI. For example, on June 1, 2021, researchers at Hangzhou Dianzi University, the University of Plymouth, and Zhejiang University published a survey on AI's applications in 5G. Because this article was made available through CNKI's enhanced publishing, both the article and its images, which include diagrams of precoding neural network systems, are downloadable. **The article has been downloaded over 2,700 times.** While the full-text of the article is in Chinese, its indexing and abstract are available in English and there is no barrier to using Google translate for machine translation of the full text.

Information from CNKI is vital to tracking China's AI development and integral to researchers interested in global scientific development.

See the below links for further reading on China's use of and research into AI.

- **Understanding China's AI Strategy - Center for a New American Security** https://www.cnas.org/publications/reports/understanding-chinas-ai-strategy
- **China to make AI deliver greater benefits to society - People's Daily** http://en.people.cn/n3/2020/1209/c90000-9797196.html
- **Chinese Public AI R&D Spending: Provisional Findings - Center for Security and Emerging Technology** https://cset.georgetown.edu/wp-content/uploads/Chinese-Public-AI-RD-Spending-Provisional-Findings-1.pdf
- **Is China Emerging as the Global Leader in AI? - Harvard Business Review** https://hbr.org/2021/02/is-china-emerging-as-the-global-leader-in-ai
- **The Militarization of Artificial Intelligence - Stanley Center for Peace and Security** https://front.un-arm.org/wp-content/uploads/2020/06/Stanley-Stimson-UNODA-2020-TheMilitarization-ArtificialIntelligence.pdf
- **'Forget the Facebook leak': China is mining data directly from workers' brains on an industrial scale - South China Morning Post** https://www.scmp.com/news/china/society/article/2143899/forget-facebook-leak-china-mining-data-directly-workers-brains
- **How China is preparing for an AI-Powered Future - Wilson Center** https://www.wilsoncenter.org/sites/default/files/media/documents/publication/how_china_is_preparing_for_ai_powered_future.pdf