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OCE's artificial intelligence (AI) report and patent dataset

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Background

- AI has progressed rapidly in recent years, generating considerable interest among academic researchers and policymakers.

- Empirical evidence on the determinants and impacts of AI inventions is still limited (Raj and Seamans 2018; Felten et al. 2021).

- The Office of the Chief Economist, in collaboration with other USPTO business units, released two new resources:

  1. An "Inventing AI" report (October 2020) describing the diffusion of AI as seen through U.S. patent documents

  2. A new public dataset (June 2021) identifying AI patents and pre-grant publications that contain AI from among 13.2 million total patent documents

Report highlights

- Artificial intelligence (AI) is increasingly important for invention, diffusing broadly across technologies, inventor-patentees, organizations, and geography.

- In the 16 years from 2002 to 2018, annual AI patent applications increased by more than 100%, rising from 30,000 to more than 60,000 annually. Over the same period, the share of all patent applications that contain AI grew from 9% to nearly 16%.

- Patents containing AI appeared in about 9% of all technology subclasses used by the USPTO in 1976 and spread to more than 42% by 2018.

- The full report is available at: https://www.uspto.gov/ip-policy/economic-research/publications/featured-ip-infographic

OFFICE OF THE CHIEF ECONOMIST
IP DATA HIGHLIGHTS

Number 5, October 2020

Inventing AI

Tracing the diffusion
of artificial intelligence
with U.S. patents

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AIPD highlights

- Used "AI to find AI" – a machine learning (ML) model was built to identify AI in patent documents

- Examiners with expertise in AI evaluated a random sample to validate the predictions

- Artificial intelligence (AI) is increasingly important for invention, diffusing broadly across technologies, inventor-patentees, organizations, and geography

- OCE's ML approach achieved superior overall performance relative to a variety of benchmarks from the academic and policy literatures

- Both the set of patent documents predicted to contain AI and the training data were released to facilitate replication and follow-on work

- AIPD working paper available on the Social Science Research Network (SSRN): https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3866793

Artificial Intelligence Patent Dataset (AIPD)

Identifying artificial intelligence (AI) invention: A novel AI patent dataset

USPTO Economic Working Paper No. 2021-2

62 Pages · Posted: 30 Jun 2021

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Thank you!

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