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Trends and priority shifts in artificial intelligence technology invention: A global patent analysis

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Abstract

This study is the first to apply a decomposition framework to clarify the determinants of AI technology invention. Consisting of 13,567 AI technology patents for the 2000-2016 period, our worldwide dataset includes patent publication data from the U.S., Japan, China, Europe, and the Patent Cooperation Treaty (PCT). We find that priority has shifted from biological and knowledge-based models to specific mathematical models and other AI technologies, particularly in the U.S. and Japan. Our technology type and country comparison shows that the characteristics of AI technology patent publication differ among companies and countries.

Keywords: artificial intelligence; patent decomposition analysis; research and development strategy; biological model; knowledge-based modeling