Evaluation of National Research Motivation Evolution with Improved Social Influence Network Theory Model: A Case Study of Artificial Intelligence

Authors : Yating Yang, Xue Zhang, Chengli Zhao

Abstract : In the increasingly interconnected global environment brought about by globalization, it is crucial for countries to timely grasp the development motivations in relevant research fields of other countries and seize development opportunities. Motivation, as the intrinsic driving force behind actions, is abstract in nature, making it difficult to directly measure and evaluate. Drawing on the ideas of social influence network theory, the research motivations of a country can be understood as the driving force behind the development of its science and technology sector, which is simultaneously influenced by both the country itself and other countries/regions. In response to this issue, this paper improves upon Friedkin's social influence network theory and applies it to motivation description, constructing a dynamic alliance network and hostile network centered around the United States and China, as well as a sensitivity matrix, to remotely assess the changes in national research motivations under the influence of international relations. Taking artificial intelligence as a case study, the research reveals that the motivations of most countries/regions are declining, gradually shifting from a neutral attitude to a negative one. The motivation of the United States is hardly influenced by other countries/regions and remains at a high level, while the motivation of China has been consistently increasing in recent years. By comparing the results with real data, it is found that this model can reflect, to some extent, the trends in national motivations.

Keywords : influence network theory, remote assessment, relation matrix, dynamic sensitivity matrix
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