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EDITORIAL

# Editorial review on Vol. 6 No. 1

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We are currently experiencing the fourth industrial revolution, characterized by advancements in cloud computing, the Internet of Things, big data, and robotics[1]. Within the field of artificial intelligence (AI), the rapid development of generative AI has initiated a technological revolution. Large models refer to machine learning models with a significant number of parameters and complex structures. In deep learning, large models typically consist of neural network models with millions to billions of parameters. These models require substantial computing resources and storage space for training and storage, often employing distributed computing and specialized hardware acceleration techniques[2]. The development and training of large models aim to provide more robust and accurate performance, particularly for complex and extensive datasets or tasks. Large models excel in capturing subtle patterns and rules, exhibiting strong generalization and expression capabilities.

The emergence of general large-scale models and industry-specific large-scale models has not only brought about tremendous technological progress across industries but is also gradually transforming our way of life and work[3]. General large-scale models are versatile generative AI models capable of handling multiple tasks and domains. On the other hand, industry-specific large-scale models are optimized and tailored to meet the specific requirements of particular industries, offering enhanced specialization and expertise. Unlike general large-scale language models, industry-specific models focus on a specific industry. By training and optimizing on domain-specific data, industry-specific models can better understand and process industry-specific terminologies, standards, and semantics.

Advancements in technologies such as big data and deep learning, coupled with an improved understanding of industry-specific requirements, have facilitated the development of industry-specific models. Businesses and practitioners can leverage the language comprehension and generation capabilities of these models to address industry-specific problems. Large-scale models are not static, they continuously learn and improve. Therefore, data and algorithms form a flywheel effect where high-quality data leads to advanced algorithms, and vice versa. Establishing an early data-algorithm closed loop is not only crucial for product success but also a key factor in enterprise competition[4].

In business scenarios, both general large-scale models and industry-specific models play important roles[5]. General large-scale models, due to their versatility, can be widely applied in areas such as intelligent customer service, intelligent recommendations, and natural language processing. Conversely,

industry-specific models cater to the specific needs of particular industries such as healthcare[6], finance, or education. With technological advancements, thereis a growing trend towards the integration of general large-scale models and industry-specific models. This integration leverages the general capabilities of large-scale models while fully utilizing the specific domain advantages offered by industry-specific models, resulting in improved enterprise efficiency and competitiveness. The integration of these models not only leads to technological advancements but also enables companies to better cope with the fierce competition in the market[7]. By efficiently utilizing AI technology, businesses can improve operational efficiency, enhance customer satisfaction, and explore new business and commercial models under new technological paradigms.

It is essential to emphasize that the governance of large-scale models should receive widespread attention. Generative artificial intelligence possesses three major technological characteristics: big data, large-scale models, and vast computational power. This, along with key technologies such as natural language understanding, knowledge engineering, and brain-like interactive decision-making, presents five major risks: societal value, user utilization, data compliance, data security, and data quality. These risks have already surfaced in various fields and application scenarios, including finance[8], healthcare[9], education[10,11], e-commerce, and media. The development and governance of large-scale artificial intelligence models require four initiatives. Firstly, adopting open-source collaboration and promoting continuous innovation in large-scale model technology. Open-source development should be encouraged to address common issues like transparency and stability collaboratively. Promoting the open sharing of computing resources and digital assets is also vital to accelerate the formation of an industrial ecosystem for large-scale models. Secondly, focusing on scenario-driven approaches and expanding the application of large-scale models across industries. Driving scenario innovation and utilizing scenario applications can promote technological iteration and enhancement. The implementation of large-scale model technologies in key sectors like manufacturing, healthcare, and power should be expedited to empower high-quality economic and social development. Thirdly, upholding technological benevolence and strengthening the governance of ethical risks associated with large-scale models. A responsible approach should be adopted to facilitate the development of large-scale models while consistently deepening the research on ethical risks and governance systems for artificial intelligence. Enhancing the security, reliability, trustworthiness, and privacy protection of large-scale models is crucial, offering technical support and assurance for their governance. Lastly, maintaining an open-minded approach and fostering international exchange and cooperation in large-scale models. Advocating for a community with a shared future for humanity, the focus should be on how large-scale models can contribute to scientific discoveries, engineering research and development, and the resolution of sustainable development issues such as environmental governance and energy management[12]. Deepening international cooperation and expanding collaboration space are key objectives.

In summary, the integration of general large-scale models and industry-specific models represents an important direction for the future development of AI. This integration brings technological advancements and helps businesses enhance efficiency and competitiveness. Moving forward, we anticipate witnessing more integrated applications of general large-scale models and industry-specific models, along with the subsequent prosperity and development of the AI ecosystem.

## Conflict of interest

The author has disclosed no conflict of interest.

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