

Scientists Discuss Future of Science and AI

By SUN Jin & ZHAO Hanbin

The Tengchong Scientists Forum 2025, held in Tengchong city, Yunnan province in southwest China, brought together the world's top scientific talent, including Nobel laureates, Turing Award winners, Fields medalists, and leading Chinese academicians to discuss AI changing the world.

The discussions from December 5 to 8 spanned critical fields like digital security, mathematics, materials science, quantum technology, agriculture, and robotics.

Bridging basic research and application

Turing Award recipient Andrew Chi-Chih Yao, acknowledging AI's potential for good, cautioned about new challenges in digital security. He used biosynthesis technology as an example to warn that large AI language models could be maliciously used to aid in the synthesis of harmful DNA sequences.

To counter this, Yao proposed cross-disciplinary solutions merging biology and cryptography to develop safe, privacy-preserving DNA screening systems.

Fields medalist Efim Zelmanov stressed mathematics as the foundation of AI, pointing out that the core of deep learning techniques is rooted in mathematical principles like polynomial approximation. The foundational logic behind modern applications such as cybersecurity and blockchain can be traced back to the finite fields established by



The opening ceremony of the Tengchong Scientists Forum 2025 is held on December 6. (PHOTO: XINHUA)

French mathematician Évariste Galois in the 19th century.

Nobel laureate Konstantin Novoselov spoke about AI's capacity to expand scientific boundaries. He cited the use of AI and robotics to achieve unprecedented atomic-level precision in developing advanced materials like graphene.

Promoting sci-tech from theory to reality

Pan Jianwei, an academician of the Chinese Academy of Sciences, described the forthcoming era of quantum networks, promising improvements

in Internet security and speed. He said in the future, when quantum computing and AI are combined, it will be possible to surpass human intelligence.

His team has reported significant progress in quantum communication and computing, and is developing practical applications like integrated space-ground quantum networks and quantum-enhanced telescopes.

Huang Sanwen, president of the Chinese Academy of Agricultural Sciences, presented a breakthrough in hybrid potato breeding. Using genomic design,

his team has developed the world's first hybrid potato capable of propagation from true seed, overcoming the inherent limitations of asexual reproduction.

Huang said the technology could revitalize some 200 million mu (about 13.3 million hectares) of farmland in southern China lying fallow in winter. It could also be extended to 45 vegetatively propagated crops globally, making a scalable contribution to world food security.

Wang Xingxing, founder and CEO of Unitree Robotics, underscored the importance of endowing robots with human-like mobility. "Movement is essential for robots to finish human tasks. We aim to enable robots to execute all human motions."

"The AI data for embodied intelligence is scarce, but this presents the best opportunity for innovation," Wang said. Although robots still face challenges in unfamiliar environments, he thinks that with 30,000 units collecting data globally and continuous AI model optimization, robots could perform 80 percent of tasks in 80 percent unfamiliar scenarios within two years.

Scientific progress is strongest when foundational research, cutting-edge technology and real-world needs converge. The exchanges in Tengchong underscored a common message: AI and related technologies can expand human capabilities and public benefit — if pursued with interdisciplinary collaboration and a focus on accessibility and safety.

Case Study

Hebei's Committed Efforts Toward Ecological Protection

By Staff Reporters

In the first eight months of 2025, the average concentration of PM2.5 (fine inhalable particles) in the province was 30 micrograms per cubic meter, a year-on-year decrease of 18.9 percent, according to He Litao, deputy director of the Department of Ecology and Environment of Hebei province.

This data reflects Hebei's committed effort toward ecological protection. The province has deeply integrated sci-tech innovation into green development, striving to transform the vision of "bluer sky, greener land and cleaner water" into practice, and ensuring the implementation of major national strategies.

Bluer sky

Steel is a pillar industry in Hebei and also the priority for green transformation.

Hebei's goal for the steel industry is to achieve A-level environmental performance, implement policies according to conditions of every single enterprise, and promote the green and low-carbon transformation of the entire process and industrial chain.

Since 2016, Hebei has cumulatively reduced its crude steel production capacity by over 82 million tonnes, and more than 80 steel enterprises have completed their relocation from urban areas.

Meanwhile, Hebei has established an automatic air monitoring network and automatic pollution source monitoring network. They can collect and analyze over 23 million pieces of data daily. Through large AI models and online diagnosis, they can achieve precise source tracing and targeted treatment.

The collaboration of technological measures has reduced the average concentration of PM2.5 by 63.8 percent during the period of 2013 to 2024.

Greener land

The Saihanba afforested area, which covers 94,000 hectares in Hebei, is an example of the province's ecological restoration efforts through technological innovation.

To protect forests, Hebei has set up over 6,000 monitoring stations and established an integrated smart management

and protection platform covering air, space and ground.

Xiongan New Area, designated as a relocation area for the non-capital functions of Beijing, uses big data to manage over 20 million seedlings, and enriches the diversity of plants to create a more natural forest.

Since the beginning of the 14th Five-Year Plan, Hebei has completed afforestation and reforestation of over 30 million mu. Meanwhile, the forest coverage rate in Xiongan New Area has increased from 11 percent when it was established to 35 percent to date.

Cleaner water

The ecological environment governance and protection of Baiyangdian, a major wetland in north China, represents Hebei's water management employing technological measures.

A monitoring network has been established, applying various technical means such as satellite remote sensing, unmanned aerial vehicles, and underwater sensors, to achieve real-time monitoring of the water quality of Baiyangdian.

A series of precise technological measures have been carried out, including silt removal and dredging, returning farmland to lakes and unblocking water systems. A total of over 27 million cubic meters of silt have been removed and 212 kilometers of channels have been dredged, achieving the connection of small lakes and ensuring water navigation.

In terms of biodiversity restoration, the local government has improved the wetland's functions, and established a buffer to purify the water flowing in. Dynamic monitoring of bird activities is also carried out, using video surveillance and voiceprint recognition. This has helped the number of wild bird species to increase from 90 to 296.

"Technological innovation is the core driving force for green development," Long Fenjie, director of the Department of Science and Technology of Hebei Province said, adding that Hebei will continue to focus on key areas such as air pollution prevention and control, ecosystem restoration, and green and low-carbon transformation.



A scenic view of Baiyangdian Lake, Hebei province. (PHOTO: XINHUA)

China's AI Models Rise as Innovation Accelerates

AI Ripples

By LIANG Yilian & DU Peng

China's artificial intelligence ecosystem is gaining rapid global traction, with domestic large models rising in international rankings and expanding their influence across industries.

The latest assessment released by the prominent evaluation platform LMArena ranks several Chinese models among the world's best. Baidu's ERNIE model has been placed second globally — and first in China — for text capabilities, excelling in creative writing, long-form comprehension, and following instruction. It also ranks among the global leaders in visual understanding.

Zhipu's GLM-4.6 has a leading position in coding capabilities, matching the performance of other top international models.

Since the rise of DeepSeek earlier this year, global interest in China's AI development has intensified. Large models have quickly become a strategic battleground in international competition. Through advances in fundamental research, product deployment,

and ecosystem building, Chinese AI developers are entering the global first tier, helping to reshape productivity in sectors across the economy.

"Intelligence itself is the biggest application, and the speed of technological iteration is the only real moat," Baidu founder Li Yanhong said at the 2025 Baidu World Conference. Over the past year, he remarked, the capabilities of large models have expanded well beyond conversational tools, with notable progress in digital humans, coding agents, and systems capable of autonomously searching for "globally optimal solutions" in complex scenarios.

China currently leads the world in the pace of model development. By July, Chinese institutions had released 1,509 large models — 40 percent of the global total. According to Stanford University's 2025 AI Index Report, China's high-performance models have rapidly improved in both quantity and quality, with the performance gap between top Chinese and international systems narrowing significantly by the end of 2024.

At the heart of this progress is continuous technological innovation. Baidu's newly launched ERNIE 5.0, a next-generation natively multimodal model with 2.4 trillion parameters, has a unified architecture capable of processing

and generating text, images, audio, and video.

Unlike earlier approaches that combined separate modules for different types of data, Baidu's new design builds a single, integrated framework from the ground up, enabling the model to handle heterogeneous information with greater fluidity and synergy, according to Baidu.

Chinese AI models are also making a strong mark on the global open-source community. A joint report by MIT and Hugging Face, a U.S. company that uses machine learning to develop computation tools for building applications, says Chinese developers accounted for 17.1 percent of worldwide downloads of open-source AI models over the past year, surpassing the U.S.

Baidu's multimodal reasoning model recently topped both the global model trending chart and the global multimodal chart on Hugging Face. "Baidu has led more than 1,000 open-source projects, with over 21,000 community contributors," said Chen Shangyi, chair of Baidu's technology committee.

Competition among large models is increasingly shaped by the strength of foundational hardware and development platforms. Domestic AI chipmakers such as Kunlunxin, Ascend, and Cambricon

are rising rapidly, with Baidu's latest Kunlunxin products offering significant improvements in performance and cost.

At the software level, platforms including Baidu's PaddlePaddle, Huawei's MindSpore, and Megvii's MegEngine are helping developers deploy large-model applications more efficiently.

As technological capacity expands, real-world applications are emerging as the primary measure of value. With its vast population and diverse industry scenarios, China has become the world's largest and most dynamic testing ground for large-model deployment.

In the energy sector, for example, Baidu worked with State Grid to build a unified AI innovation platform and deploy an intelligent drone inspection system capable of five million tower inspections annually, reducing manual climbs by 40 percent.

Backed by an end-to-end AI stack — from chips to frameworks, models, and applications — Baidu is partnering with enterprises across education, healthcare, finance, and manufacturing. Its PaddlePaddle-ERNIE ecosystem now supports over 23 million developers and 760,000 companies.

"When AI becomes a native capability," Li said, "intelligence is no longer a cost — but a source of productivity."

Data Element Education Guideline Released

Policy Express

By SUN Jin

In an effort to address the shortage of digital talent and support the ongoing reform of the market-oriented allocation of data elements, China has issued a guideline that sets out four key areas and 12 measures to build a comprehensive talent cultivation system covering discipline development, vocational education, academic research and industry-university-research-application.

The guideline, jointly released by

the National Development and Reform Commission, the Ministry of Education, and three other departments, encourages qualified universities to establish disciplines and majors related to data elements, such as data science and engineering, digital economy and management.

Universities with strong foundations and disciplinary resources are also encouraged to establish digital schools and relevant majors. To meet the urgent knowledge and skills needed in the growing data industry, universities are urged to offer micro programs in data element fields like data governance and data security.

For vocational education, the guideline also calls for adjusting training programs in line with digital industrial needs. New majors like data collection and cleaning, data annotation, and data operations will be supported. Enterprises and vocational schools will hopefully also jointly develop training bases and industry-aligned courses based on real digital industrial scenarios.

Application scenarios in the data field are regarded as a vehicle for industry-university-research-application. According to the guideline, enterprises are expected to lead the construction of such application scenarios, while universities and other research institutions

are being motivated to participate directly, accelerating the cultivation of versatile, innovative, and practice-oriented digital talent.

"The guideline marks a shift from fragmented exploration to a systematic, professional and high-quality development stage," said Yuan Jun, deputy director of the National Data Development Research Institute. "With its implementation, China will gradually bridge the gap between talent supply and industrial demand and foster a deeply integrated digital talent ecosystem," he added.



Steel Tech Collaboration Forges China-Serbia Friendship

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He reaffirmed Hebei's commitment that, "We will continue optimizing policies for international sci-tech collaboration, deepening integration within the Belt and Road Initiative, and fostering exchanges among young scientists."

The participants agreed that sci-tech innovation transcends borders and serves as a solid bridge for friendship and common development.

"Green, low-carbon steel development requires not only technological innovation but also international cooperation and shared wisdom," Lin Zhangguo, deputy general manager of the HBIS Group, stated. "We aspire to build long-term bridges with Serbian and global partners in green manufacturing, low-carbon R&D, and high-end talent cultivation to steer the global steel industry toward greater sustainability and efficiency."