



Science and Technology Daily

VOL.5-NO.177

FEBRUARY 8-9, 2025

Tech Empowers 9th Asian Winter Games

By LIANG Yilian

The 9th Asian Winter Games are being held in Harbin, Heilongjiang province in northeast China, from February 7 to 14. The opening day was also the 10th day of the Chinese New Year, infusing the city with the joyous spirit of the Spring Festival and the excitement of the major sporting event.

With over 1,270 athletes from 34 countries and regions across Asia, this edition marks the largest participation in the history of the Games, according to the organizing committee.

Innovative ice sculptures

The event also showcases cutting-edge technologies. The Harbin Ice and Snow World, a prime tourist destination that was a sub-venue for the opening ceremony, is displaying innovative ice sculptures crafted with natural plant-based color ice. Developed by a team from Harbin Normal University and Northeast Forestry University, it offers a unique visual experience.

This is the first time natural plant color ice has been used outside the laboratory. The pigments are purely plant-derived, according to Zhang Xin, an associate professor at Harbin Normal University.

AI-driven ice cutting

Given Harbin's freezing weather, constructing the ice landscape in less than three weeks posed a significant challenge.

To address this, researchers at the Harbin Institute of Technology developed an automated ice-cutting equipment. The device comes with artificial intelligence, real-time monitoring, and multi-sensor data fusion, ensuring precise ice brick cutting and meeting high-quality standards.

Seamless event management

For the first time, the competition venues have utilized 5G NR indoor enhanced positioning technology developed by telecom operator China Unicom. This state-of-the-art system enables real-time tracking of operation and maintenance personnel, ensuring swift emergency responses and seamless event management.

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Mascots of the 9th Asian Winter Games Harbin 2025 Binbin (L) and Nini are pictured at the 26th Harbin Ice-Snow World in Harbin, northeast China's Heilongjiang province, February 1, 2025. (PHOTO: XINHUA)

Editor's Pick

AI Transforming Drug Discovery

By LIN Yuchen

A future where life-saving drugs are developed in months instead of decades, rare diseases are diagnosed in weeks, and virtual patients replace costly and time-consuming clinical trials is now on the horizon, thanks to AI. The pharmaceutical industry is undergoing a revolution at an unprecedented pace.

In 2023, researchers from MIT harnessed AI to crack a 60-year-old challenge: the discovery of an antibiotic effective against methicillin-resistant *Staphylococcus aureus* (MRSA). By analyzing data from 39,000 compounds and deploying advanced deep learning models, they screened 12 million molecules to identify one that was both safe and ef-

fective. Achievements like this, once deemed impossible with human capabilities alone, showcase AI's transformative potential in drug discovery, drastically reducing time and increasing success rates.

Using AI to speed up drug design

AI plays a critical role in improving drug design, especially in identifying and working with drug targets — specific molecules in the body that a new drug aims to interact with to treat a disease. Traditionally, finding these targets and successfully creating a drug around them has been extremely challenging, as many promising discoveries fail during testing and development. AI helps overcome this difficulty by analyzing vast amounts of data to identify potential drug targets

and predict how they might respond to treatment. This approach not only makes the process faster but also significantly improves the chances of developing effective treatments.

Researchers estimate that AI can reduce the time needed to design new drugs by up to 70 percent, and dramatically increase the likelihood of success.

As noted by Chinese Academy of Sciences academician Chen Kaixian, AI's potential to influence the entire drug development chain is vital. Its ability to predict successful drug-target interactions and streamline molecular design has already led to substantial improvements in both efficiency and effectiveness across the industry.

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Spring Festival's Tech Story

Well-being Supported by Sci-tech Innovation

By Staff Reporters

During the Spring Festival, *Science and Technology Daily* reporters traveled across the country to explore how sci-tech innovation has improved people's well-being.

Traditional vegetable industry upgraded

During the Spring Festival holiday, the greenhouses of the national modern agricultural park in Fangshan district contributed to the undisrupted supply of vegetables in Beijing. The greenhouses use technologies like soilless culture and atomized irrigation, which not only boost planting density and yield, but also reduce water and fertilizer usage.

In contrast to the dry winter environment of Beijing, the greenhouses are

humid. Cao Yong'an, general manager of an agricultural technology company, said the supply of water and fertilizer, temperature and humidity in the company's greenhouses are controlled with the help of smart technologies.

To boost sales, the company also sells its products online and promotes farm visits during which visitors can pick their own vegetables. It now plans to build more greenhouses in the area, with the goals of boosting vegetable yields and fostering new business opportunities.

Healthcare facilitated by AI

In Yunnan province in southwest China, China Mobile has established an application for receiving medical consultation at home. People can make hospital registrations and online doctor visits via voice call once they are connected to the

platform through a TV set-top box.

"We can consult doctors as soon as we turn on the TV," said Yu Dan, a villager in Yunnan. When Yu's father broke his leg, she uploaded photos of his injured leg to the app and received experts' advice in less than 10 minutes.

A technician from China Mobile said AI medical consultation is based on image recognition and healthcare and elderly care large models. It has a very high professional level and is an ideal all-day AI health butler.

With the joint efforts of hospitals and pharmacies in Yunnan, and enterprises like iFlytek and China Mobile, residents have their health records, an AI health butler, and healthcare and elderly care services.

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China-built Hydropower Project Energizes Zambia

International Cooperation

By WANG Jing

As a flagship project between China and Zambia under the Belt and Road Initiative (BRI), the Kafue Gorge Lower Hydropower Project (KGL) is Zambia's largest infrastructure project in more than 40 years. Zambian President Hakainde Hichilema said the KGL is one of the achievements of longstanding cooperation between two countries.

Zambia has many rivers and abundant water resources. However, due to insufficient investment and inadequate infrastructure construction, only about 25 percent of the country's urban population and about three percent of its rural population have a stable electricity supply, which severely restricted its economic development.

The KGL was built by PowerChina, with a total installed capacity of 750 MW. In June 2021, the first unit of the KGL was connected to the grid. In March 2023, all of its five units were successfully connected to the grid. By the end of 2024, the KGL had generated more than 10.5 billion kWh of electricity.

The project plays an important role in the peak and frequency regulation of Zambia's power grid. Its completion and operation boosted Zambia's national power supply by approximately 38 percent by the end of November 2023.

The KGL not only meets the electricity demand of Zambia, but also means it can export electricity to other countries, including Malawi, Zimbabwe, South Africa and Namibia, contributing to the overall development of the southern Africa region. It provides a good foundation for Zambia to develop new energy industries, and contributes to Zambia's green and low-carbon development.

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Key Initiatives Advance Digital Transformation

By LIN Yuchen

The recently held National Data Work Conference celebrated China's progress in digital transformation, underscoring 2024 as a year of substantial achievements. From bolstering data infrastructure to fostering innovation in the digital economy, the nation has readied the platforms for accelerated development in its Digital China initiative.

Building on this momentum, 2025 will see expanded implementation of landmark projects like the "East Data, West Computing." This program aims to optimize computing power distribution nationwide, with over 60 percent of newly added computing capacity allocated to national hub nodes by the year-end, and more than 80 percent powered by renewable energy sources. Key priorities also include urban digitalization, deep integration of the digital and real economies, and the cultivation of a unified national data market, all the while emphasizing green growth and sustainability.

Several practical implementations highlight the nation's success in this transformation. China Mobile's smart platform, a robust system integrating over 900 advanced capabilities, has been instrumental in supporting applications ranging from smart city development to rural revitalization and digital office solutions. Its comprehensive ecosystem exemplifies the potential of digital platforms to drive efficiency and innovation.

In the industrial sector, China National Offshore Oil Corporation's deployment of digital factory systems has revolutionized production management. The initiative has achieved a 95 percent data collection rate and enhanced production accuracy, while significantly reducing operational costs. Meanwhile, Yahua Lithium's industrial Internet platform has integrated business, finance, and production systems to streamline processes and improve management efficiency.

The AI sector is another area of rapid advancement.

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New Graphic

China's total services import
and export value exceeded

1 trillion USD

for the first time in 2024



Annual trade in services reached

7.5 trillion RMB

14.4% y/y

Source: The Ministry of Commerce
Designed by YAO Yilu / Science and Technology Daily

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