High-tech another star of Beijing Winter Games

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The Beijing 2022 Winter Olympic Games is a stage for cut-edging technologies and China's vision for the future, from artificial intelligence to 5G, robots, new display and light tech to digital currency.

All this new high-tech covers everything from training to venue construction, services with social distancing, winter sportswear with special materials and on to high-definition 8K broadcasting.

And not to mention the technologies that powered the shining performances of the opening ceremony directed by famous director Zhang Yimou.

Thomas Bach, the President of the International Olympic Committee, called on this Winter Olympics to "set a new standard for the future."
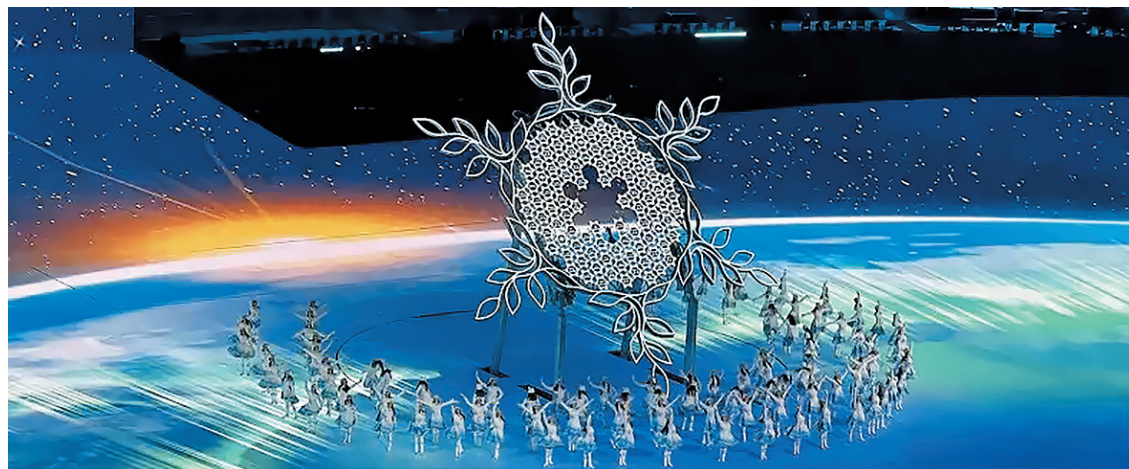
He made his point through a holograph backed by Alibaba.

There are more than 200 new technologies being tested and used in the winter Olympics.

Many technologies and ideas will be adopted widely or in commercial use, which will change and improve our daily life.

They include Olympic uniforms with special heat storage fibers and thermal insulation material developed by a Shanghai firm; winter sports analysis and tracking applications and devices used by the Chinese short track speed skating team, and e-*yuan*, China's official digital currency, used by foreign athletes and visitors in the Olympic Village.

The Lie Bao high-speed camera debuted at the Beijing Winter Olympics.

High-speed Camera and Network

Lie Bao (cheetah) shined in the speed skating stadiums where China won several medals. It's also the first super-high speed camera at an Olympics.

Developed by the China Media Group, it can shoot at speeds of 25 meters per second or 90 kilometers per hour, which can catch up athletes during speed skating races with a speed of 15 to 18 meters a second.

It accurately captures moves and foul plays during the speed skating event, supporting 4K resolution.

Multi-angle and high-definition (4K and some 8K) videos of the Winter Olympics are broadcast through platforms like CCTV and Migu, with improved bandwidth through 5G networks. Migu is China Mobile's digital entertainment platform and an Olympics authorized broadcasting platform.

After the Olympics:

The high-speed Lie Bao camera is going to be used in sports training, which helps coaches better record and analyze athletes' moves. It's also expected to help referees find fouls and solve possible disputes.

China had 1.43 million 5G base stations nationwide by the end of 2021 — for 60 percent of the global total.

More 5G applications like HD broadcasting will soon appear on the market.

Snowflake, created by BOE's advanced display technology, shined at the Games opening ceremony. — All photos/Ti Gong

Display and Light

The Winter Olympics' opening ceremony, in the National Stadium or "Bird's Nest," brought stunning moments and memories for us.

Director Zhang, who was also the director of the 2008 Beijing Olympics opening ceremony, adopted new technologies again.

BOE, China's top display panel manufacturer, made a customized LED stand consisting of 550,000 LED lights to create a "giant snowflake."

The snowflake stood on a 10,393-square-meter ground display, with 8K resolution and 100000:1 ultra-high contrast — 100 times the average display. It's the world's biggest 8K ultra-high definition display system, said BOE.

For the opening ceremony, chip giant Intel specially designed and developed multiple AI models for human detection.

The AI algorithms can stably and accurately identify hundreds of actors in the field, and finally use the multi-camera calibration results to output their real locations.

After the Olympics:

"The advances of the Winter Olympics reflect the strength of related technology companies in our country, and are expected to inspire follow-up activities and promote the application of technological elements in related activities," Huatai Securities said in a research note.

The advanced display and the Internet of Things technologies are used on devices such as TV and smart home systems. The interaction of AI and edge computing can be used in smartphones, autonomous cars and other devices.

Service robots

During the Winter Olympics, service robots do everything from disinfection to guidance, logistics, temperature measurement, to food and beverages and security.

They assist visitors and athletes and enforce social distancing requirements related to COVID-19, such as preparing and carrying food to limit human-to-human contact.

Five OrionStar robots were chosen to serve the Beijing Winter Olympics, covering greeting, translation, delivery and coffee and tea making.

The Coffee/Tea Master is a rising star in the Olympic Village, which went viral on social media.

It is composed of two six-axis cooperative robotic arms, which can start work at the same time and perform various actions precisely.

The company tested the service robots' AI algorithms for 3,000 hours and the robotic arms for 30,000 hours.

After the Olympics:

Robots represent integration for several advanced technologies, such as artificial intelligence, sensors, chips and machinery engineering. Firms like Xiaomi have developed a first generation of family-used robots.

Service robots will be widely adopted in hospitals, museums, restaurants and hotels, "like electric cars and home appliances today" cutting labor costs and boosting digital transformation, said Fu Sheng, chairman of OrionStar.

In the home, service robots may be a part of the solution for China's rapidly aging society.

A greeting robot, developed by OrionStar, works in the Beijing Olympic Village.