

Universal Value of Science and Technology

Dialogue

By LONG Yun & BI Weizi

Imagine teaching a computer to see the world as we do — recognizing faces and interpreting landscapes. For Sergey V. Ablameyko, an academicien of the National Academy of Sciences of Belarus and a visiting professor at Northwestern Polytechnical University (NPU) in Xi'an, China, this isn't science fiction, it's been his life's work for over 45 years. He has witnessed computer vision evolve from analyzing simple binary images to building multi-modal AI systems that integrate text, voice, images and video.

Career start
Ablameyko's career began in an era when computers were starting to "see." He recalled that in the 1970s, his supervisor suggested analyzing images, which involved working with binary images — simple black- and- white patterns. Although rudimentary, this work marked the beginning of everything in computer vision.

Fast forward to today, and computer vision has become central to AI development. Ablameyko explained that the goal now is not just to teach machines to see and recognize, as humans do, but to go further by integrating images and video into large language models. "We're teaching machines to see and recognize like humans," he said. "But now, we're going further. Large language models are impressive, but they're limited to text and voice. The next frontier is adding images and video



Professor Sergey V. Ablameyko. (COURTESY PHOTO)

to create truly multimodal AI systems." This shift, he believes, is transformative, as it aims to make machines more human-like in their understanding of the world.

Collaboration with China
Ablameyko's work in computer vision has advanced the field and fostered international collaboration, especially in China. His first trip to China was in January 2005, and since then, he has visited the country many times.

This collaboration has been incredibly fruitful. His teams have worked with Chinese universities and companies on projects ranging from geographic information systems to AI algorithms. Together, they have published hundreds of papers and developed practical solu-

tions in medicine, agriculture, and security. One of his most significant partnerships has been with NPU. "When I became President of Belarusian State University in 2008, we deepened our ties with NPU," he said. "It's been a rewarding relationship, both scientifically and personally."

Ablameyko values his role as a scientist and a mentor to younger researchers. For aspiring scientists, his advice is simple: love what you do. "Honours and titles will come, but they're not the goal," he said. "The goal is to solve problems, to innovate, and to make a difference." He also praised the younger generation of scientists in China, noting their hard work, passion, and impressive achievements. "They're passionate, driven, and

achieving incredible results. The future of science is in good hands."

He expressed a deep appreciation for China's culture, people, and scientific spirit, noting the strong family ties that resonate with his own Belarusian values. "I like China very much in general," he said. "Its culture, its people, and its scientific spirit are impressive. In China, family ties are solid, just like in Belarus. It's something I admire and connect with."

The bigger picture
Acknowledging China's advancements in AI, he emphasized that China's progress is an opportunity rather than a threat. "Chinese scientists are open and collaborative," he said. "They share their research and help other countries develop their capabilities. This is how science should work."

While competition in the AI field is evident, Ablameyko believes collaboration is essential. "Technically, we're competitors for excellence. But legally and ethically, we must work together," he said. "AI is too powerful to be left unregulated." He stressed the need for international rules under the United Nations to ensure AI benefits humanity and is not misused by one country against another.

According to Ablameyko, the world needs global standards to ensure it benefits humanity. He reflected on the universal nature of science, emphasizing its role in bridging divides and improving lives. "Science and technology are universal," he said, adding that, "It is about solving problems and improving lives. That's why collaboration is so important."

NPU also contributed to this article.

China Impression

Expectation for More China-Africa Sci-Tech Cooperation

By FENG Zhiwen

Daan du Toit, deputy director general of International Cooperation and Resources at South Africa's Department of Science and Innovation, recently sat down with *Science and Technology Daily (S&T Daily)* to share his thoughts on South Africa's great strides in AI and its growing collaboration with China in the sci-tech field.

S&T Daily: What are some specific achievements made in AI development in South Africa?

Daan du Toit: We have made a number of investments in developing the digital skills, as well as infrastructure capabilities of South Africa, with a specific focus on AI. For example, we have a dedicated research network for AI, the South African Artificial Intelligence Research Network, which is hosted in Pretoria by the Council for Scientific and Industrial Research, and links several universities together. And we then look at how we apply AI and use AI in support of our government's economic and social development objective.

One then sees various applications, whether it's in the areas of education, health, drug development or using AI in frontier scientific disciplines such as astronomy.

Of course China is a world leader in AI. While we admire China's world leading status as an AI power, we are also building the blocks for a strong foundation, so South Africa can be a strong partner for partners such as China in AI.

S&T Daily: Recently, China's open source AI model DeepSeek has attracted world attention. Compared with some other AI apps developed by Western countries, what advantages does this have in terms of application in the Global South countries?

Daan du Toit: I think it was really an extraordinary achievement and again demonstrates China's status as a world leader in science, technology and innovation. We are following, with much admiration, the progress of DeepSeek. And I think it's remarkable and important for the Global South for three reasons.

First, DeepSeek showed what can be achieved very cost-effectively. It's much cheaper than many similar applications and large language models being developed elsewhere. And I think that is one of the big challenges of AI — to make it affordable. I think DeepSeek's affordability is rather remarkable. It means AI can become inclusive.

And of course, the cost is linked to the technology used, making it less power intensive. So it's also more environmentally friendly. What is also very significant is the fact that the source model is open to share. And that's why we know China believes in innovation to achieve progress and to benefit all.

I think that creates really great



Daan du Toit. (COURTESY PHOTO)

opportunities for scientists and innovators from the Global South to work with China.

S&T Daily: In what areas can China and South Africa further strengthen cooperation in sci-tech development? And are there any specific sectors or projects that stand out as priorities for both sides?

Daan du Toit: We have a long standing, very privileged partnership in science, technology and innovation between South Africa and China. And our two ministries, the Department of Science and Innovation and the Ministry of Science and Technology of China, co-fund several research projects every year.

For example, we have joint research centers looking at areas such as the sustainable use of mineral resources. We also have very strong collaboration in the area of space science and technology between the South African National Space Agency and its counterpart in China.

China is a very important partner for the Square Kilometer Array radio telescope, which is the world's largest telescope hosted in South Africa. Both sides are committed to further developing this collaboration.

Some of the new areas in which we are very keen to strengthen collaboration are clean energy, clean coal technology, the hydrogen economy, and AI.

We are looking at potentially establishing a South Africa-China joint research center in AI. We are also looking to intensify collaboration on the Beidou Navigation Satellite System.

Lastly, an area where South Africa can learn a lot from China, and one in which we are very eager to collaborate, is innovation for poverty alleviation. This is because we are in awe of the remarkable success China has achieved in fighting poverty through investment in science, technology and innovation. Therefore, we are privileged in this partnership to see what we can learn from China and apply some of those best practices to fight poverty in South Africa.

The author is a correspondent for S&T Daily based in South Africa.

LHAASO: Seeing the Universe Through New Eyes

Science Outreach

By Staff Reporters

The Large High Altitude Air Shower Observatory (LHAASO) is the world's highest altitude, largest scale, and most sensitive cosmic ray detection facility, representing a major national sci-tech infrastructure project in China. Construction of LHAASO commenced in July 2016 and passed acceptance inspection in May 2023.

Located at an altitude of 4410 meters on Mount Haizi in Daocheng county, southwestern China's Sichuan province, LHAASO spans approximately 1.36 square kilometers. Its core scientific objectives include exploring the origins of high-energy cosmic rays, studying cosmic evolution and high-energy

astrophysical phenomena, and searching for dark matter.

As samples of matter beyond the solar system, cosmic rays and their origins provide critical pathways to unravel the universe's mysteries and its evolution. Since the discovery of cosmic rays in 1912, numerous explorations and studies have been conducted, yet their origin remains unresolved. LHAASO has been designed to address this major scientific puzzle.

LHAASO comprises an observation base and a control base. The observation base is situated on Mount Haizi at an average altitude of 4,410 meters, while the control base is located in Daocheng county's lower-altitude urban area. Compared to existing high-altitude stations, this site selection significantly improves field station working conditions, ensures the safety of researchers during long-term high-altitude operations, and facilitates international collaboration



Aerial photo shows the construction site of the Large High Altitude Air Shower Observatory. (PHOTO: XINHUA)

through accessible transportation.

Once formally operational, LHAASO will become a Chinese-led, multinational cosmic ray research centre. Leveraging its high altitude advan-

tages in gamma ray astronomy and cosmic ray observations, the facility will serve as a distinctive, comprehensive, and open scientific research platform.

Miao Stilt Houses: Beauty of Geometric Shapes

Traditional Eastern Wisdom

By Staff Reporters

The construction techniques of stilt houses in villages of the Miao ethnic group are a traditional architectural art in Leishan county, Guizhou province, recognized as one of China's national intangible cultural heritages.

Constructed entirely from bamboo and timber, these houses typically feature a three-tiered structure: the upper floor serves as a granary, the middle floor as living space, and the ground floor is used to keep livestock or store

other goods.

The architecture integrates principles of structural mechanics with basic geometric forms. From a macroscopic perspective, their shape combines rectangles and triangles. Columns, beams, rafters and purlins intersect perpendicularly to form a three-dimensional orthogonal grid system, that forms the basis of rectangular structures. These modules are then extended and combined to form the building.

To meet drainage requirements, roofs are designed with double or multi-sided slopes, ensuring the stability of triangular structures. Viewed laterally, the upper, middle and lower sections of the house are composed of a triangular

prism and two rectangular prisms, respectively. This design not only guarantees structural integrity but also imbues the architecture with a dignified and balanced aesthetic.

Adapted to mountainous environments, Miao villages' stilt houses serve as carriers of Miao architectural culture, holding significant historical and academic value for

the study of Miao history and cultural heritage.



Stilt houses in a Miao ethnic group village. (PHOTO: VCG)

BDS Navigates South Africa's Smart Agriculture

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The system can also use meteorological satellite data to provide advance warning of drought or heavy rainfall, allowing farmers to adjust their farming plans in time.

Crop growth data is recorded on the platform, and consumers can understand the whole production process by scanning a QR code.

Technical training

Local farmers who benefited from smart agriculture and digital economy have become the main force in promoting the application of the BDS in agriculture. Kutama expected that local government to carry out practical promotion of

BDS technology, which will attract more farmers to gain access to the BDS.

UNIVEN's digital agriculture training course is popular, with up to 400 trainees attending each lecture, Kutama said.

The Green Technology Confucius Institute at UNIVEN has been carrying out various forms of cooperation such as international Chinese education, joint training of international personnel, joint scientific research and technology transfers, with green technology as the main task.

The application of the BDS is not only a technological upgrade, but also an important opportunity to promote the integration of South Africa's agriculture into the global digital wave, said Kumata.