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# CHINA

## SCIENCE AND TECHNOLOGY REVIEW

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## China launches its first AI Model for Diagnosing Rare Diseases

Jointly developed by Peking Union Medical College Hospital (PUMCH) and the Institute of Automation of Chinese Academy of Sciences, China [launched](#) its first AI model called PUMCH-GENESIS for diagnosing rare diseases more quickly and accurately.

Regardless of AI's promising potential in healthcare, traditional AI models face hurdles in rare diseases application, mainly due to fragmented case data and scarcity of training samples. But in this latest model, the interdisciplinary team developed innovative features including active perception interaction, differential diagnosis capabilities and a hybrid “data + knowledge” driven approach. The model offers three core advantages: clinical-oriented logic, effective control of AI hallucinations and autonomous knowledge iteration, in which it enables patients to receive preliminary guidance on diagnosis and treatment through interactive consultations with the chatbot “Xiexiaochu” within minutes.

In the backdrop of the latest breakthrough of AI models in healthcare, Prof. Zhang Shuyang, President of PUMCH and Director of the Rare Disease Medical Centre, [stated](#) that it marked a transformative advancement in China's rare disease diagnostic infrastructure, where it “aim to establish PUMCH-GENESIS as a world-class model in terms of technical capabilities” and ensure China remains a leading country for “AI assisted disease diagnosis and treatment.” Prof. Zhang added that the next phase will focus

on introducing clinician-focused tools, including medical note generation, genetic interpretation and hereditary counselling support.

## China develops first Helicopter-borne Magnetotelluric Detection System

The Aerospace Information Research Institute (AIR) of the Chinese Academy of Sciences [developed](#) its first domestically helicopter-borne Magnetotelluric detection system. This advanced system can conduct geological surveys of high-altitude regions up to 5000 meters in extremely cold temperatures, complex terrain and harsh environments, and provide critical data for building projects such as railway construction.

Huang Ling, Associate Researcher at AIR, [explained](#) that the airborne magnetotelluric detection system combines three key technologies: a high-sensitivity three-component magnetic sensor for detecting faint signals, a large dynamic range signal reception, a processing system for complex environments and a stable flight pod for high-altitude operations.

## Scientific Collaboration Projects

Deepening cooperation in the field of manned space flight, the China Manned Space Agency (CMSA) and the Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) [signed](#) a Memorandum of Understanding (MoU) on 28 February in Islamabad. The agreed MoU concerns the selection and training of Pakistani astronauts, in light of their participation in China's space station flight

mission. The signing of the MoU marked the first time the Chinese government will select and train astronauts from foreign countries. Pakistani trainees will become the first foreign astronauts to visit the Chinese space station, *Tiangong*.

In the backdrop of the MoU, Lin Xiqiang, Director General of the China Manned Space Agency, [stated](#) that “Pakistan’s participation in the China space station program reflects the deep-rooted ties between the two countries” and “will contribute to mutual knowledge-sharing and broader vision of peaceful space exploration for the benefit of humanity.” Amer Gilani, Secretary of Pakistan Human Spaceflight Cooperation, SUPARCO [underscored](#) that by collaborating with China, Pakistani “space ambitions can progress much better” as China has the capabilities to launch satellites for all types of applications. Meanwhile, on the significance of MoU, Wang Yanan, Chief-editor of *Aerospace Knowledge* magazine, [stated](#) that “it [the MoU] reflects a substantial breakthrough in China’s international cooperation in major space programs, as there has been little cooperation in the manned space sector.”

### Scientific Research Breakthroughs and Discoveries

Researchers from the Institute of Oceanology of the Chinese Academy of Sciences [made](#) a breakthrough in developing a new artificial intelligence (AI) method to forecast the rapid intensification of tropical cyclones, which will considerably improve global disaster preparedness. Li Xiaofeng, head of the

research team, emphasized that contrary to traditional forecasting methods which often fail to consider complex environmental and structural factors, the newly developed AI model combines satellite, atmospheric and oceanic data. As a result, when tested on data from the tropical cyclone periods in the Northwest Pacific between 2020 and 2021, it achieved 92.3% accuracy and reduced false alarms to 8.9%.

From data collected by Chinese rover *Zhurong* from the red planet Mars, a collaborative research team from Guangzhou University from China, Pennsylvania State University, the US, and the Aerospace Information Research Institute of the Chinese Academy of Sciences have [discovered](#) that the planet Mars must have hosted oceans with waves and beaches and river deltas 4 billion years ago. In a maiden journey, the Chinese rover *Zhurong* successfully landed on the Red Planet on 15 May 2021, touching down on Utopia Planitia, i.e., the vast Martian plain where NASA’s *Viking 2* spacecraft landed in the 1970s. During its lifespan until May 2022, *Zhurong* transmitted voluminous data by scanning the surrounding geology for signs of evaporated water and ice.

Meanwhile, Chinese scientists from Harbin Institute of Technology have [developed](#) a new class of aerial/terrestrial cross-domain robot for Mars exploration. Prof. Zhang Lixian, head of the research team, outlined that the robot, which weighs around 300 grams, can roll on the ground and take flight in order to pass over obstacles. It is to be noted that by 2028, the

China National Space Administration is scheduled to undertake mission to bring samples from Mars to Earth by *Tianwen-3*, which according to Jizhong Liu, Chief Designer of *Tianwen-3* mission, is on the right track.

### **China Science Diplomacy**

The China Science and Technology Exchange Centre [hosted](#) the 7<sup>th</sup> International Symposium of Asia-Oceania Region Integrated Earth Observation Program (AOGEO) held between 25-26 February in Kunming, Yunnan. More than 80 representatives from 14 countries including Australia, Bangladesh, Cambodia, Japan, Malaysia, Pakistan, Sri Lanka, Singapore, South Korea, Thailand, and Vietnam participated in the symposium. The objective of the conference was to encourage academic institutions and international organizations in the Asia-Oceania region to strengthen cooperation under the Third Decade Strategic Plan of the Group on Earth Observation (GEO) and to promote earth observation data sharing, knowledge services, earth intelligence development and capacity building in the Asia-Oceania region. The conference reviewed the phased progress and achievements of AOGEO, and in-depth exchanges and discussion were held on the outlook of GEO's future strategic plan in the Asia-Pacific region.

The Asia-Oceania region faces several environmental challenges, including frequent earthquakes, tsunamis, floods and droughts caused by global warming. To confront these challenges, the GEO has [convened](#) an annual symposium since

2007. AOGEO is a regional academic exchange and scientific cooperation platform for coordinating data, technology, talents and other resources of the Earth Observation Systems of Asia-Pacific region under the GEO cooperation framework.