

Advancing imaging technology

The **BEIJING ADVANCED INNOVATION CENTRE FOR IMAGING TECHNOLOGY** is a vibrant new research hub bringing together experts in imaging technologies.



The Beijing Advanced Innovation Centre for Imaging Technology was established at Capital Normal University (CNU) in 2015. It was one of the first 13 innovation centres certified by the Beijing Municipal Education

Commission. The imaging-focused centre aims to advance imaging theories, develop easily applied imaging technology and to provide a best-practice imaging technology education.

Advanced imaging techniques are relevant to many

fields, ranging from electronics, energy and biomedicine to aerospace and remote sensing. The field also contributes to the development of important emerging industries, such as virtual reality display, new-generation information processing, and the production of high-end equipment or materials, particularly as 3D and multidimensional-imaging advances.

The CNU centre focuses on the research and development of technologies such as: X-ray and computed tomography imaging for the medical field; terahertz and infrared imaging for public security; and remote sensing imaging for earth observation. The work is supported by fundamental research on mathematical geometry and high-speed algorithms. Devoted to the collection, reconstruction, management, display and application of 3D or multidimensional image information, the centre also works on core imaging components and safety verification, multiple-source intelligent pattern recognition using imagery and data visualization. With innovation at the heart of its development, the centre is in a nimble position to explore cross-disciplinary research and blue-sky ideas.

The existing resources of CNU include 14 provincial key laboratories and engineering centres, a state key laboratory, and national and international science and technology collaboration bases. Within a year, it has assembled a strong research team, and recruited a number of internationally renowned experts from overseas, many of whom are attracted to the interdisciplinary nature of the centre and its dedication to innovation. "To establish world-class research," says the centre's director, Fang

Fuquan. "We need first-class talent and good management."

Breakthroughs in key technologies have already begun. One recruit has been Zhang Xicheng, a world-leader in terahertz science, who leads the centre's terahertz and infrared research and has helped setting up several significant international collaborations. Another researcher at the centre, Gu Xianfeng, is the founder of an emerging interdisciplinary field known as computational conformal geometry. He joined the centre in 2016 from the State University of New York at Stony Brook in the USA. His team has since developed real-time dynamic 3D imaging technology and applied conformal geometric algorithms to medical imaging, advancing virtual colonoscopy technology.

With a growing talent team, the CNU centre is poised to become a world-class imaging technology base for cutting-edge research and talent training, which will make great social impacts. ■

"CNU has strong tradition in modern differential geometry, topology, partial differential equations and optimization, which are fundamental in engineering and medical research. It has a top research team in advanced imaging technologies for biomedicine and digital media industries. Furthermore, the students in CNU have solid training in both pure mathematics and advanced engineering. These aspects have made CNU the perfect place to conduct research that combines modern geometry and engineering with medicine."

— Gu Xianfeng



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