



Cambridge University - Nanjing
Centre of Technology and Innovation
剑桥大学南京科技创新中心



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中心举办剑桥大学Impulse创业营
CUNJC Organized Cambridge Impulse Programme

中心举办第四期国际技术系列路演
CUNJC Held the Fourth International Technology Roadshow Series

初大平教授受聘江北新区集成电路产业发展咨询专家
Professor Daping Chu was Appointed as a Consultant for the Development
of IC Industry in Nanjing Jiangbei New Area



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PREFACE



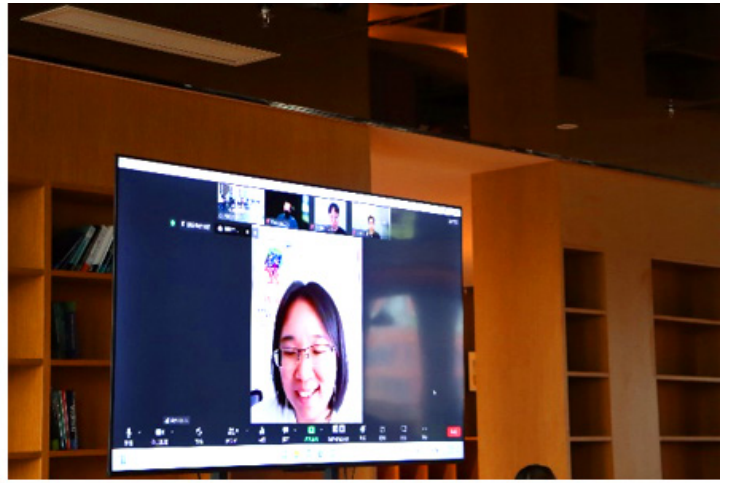
Act locally and think globally. We looked back on our achievements in the first half of 2022: The Cambridge University - Nanjing Centre of Technology and Innovation (“CUNJC”), as the first research centre of the University outside the United Kingdom, always follows the overall direction of application-oriented research and industrial promotion, and focuses on the research, transformation and connection of innovative achievements, which has brought about a series of achievements. We have cooperated with Chinese colleges, universities, research institutions and tech enterprises. In the first half year of 2022, CUNJC has promoted both scientific research and business activities, establishing a three-dimensional pattern with scientific and technological innovation as the main line and multi-resources from the University as the support. We contribute to the orientation of building “three platforms and one centre”, and strive to be “the connector linking the University and Nanjing”, “the generator of application-oriented innovative technologies”, “the amplifier of technological potentials” and “the accelerator of innovation and entrepreneurship”, aiming to boost the economic and social development.



1 HEADLINES

In 2022, CUNJC introduced the Impulse Programme led by the Maxwell Centre of the University of Cambridge. This is the first time for this time-tested entrepreneurship training programme to be introduced into China. The selection of the first group of local trainees has attracted many talents from prestigious universities in China and abroad as well as returned alumni, who stood out in terms of application-based scientific research. After careful selection, 7 local entrepreneurs, who focused on semi-conductor, optoelectronics, biomedical, artificial intelligence, software and hardware development, community services and engineering assistance respectively, were admitted. Among them, 30% graduated from the University of Oxford or the University of Cambridge, 85% hold a postgraduate or doctoral degree and over 40% were women.





The Impulse Programme is a short-term training programme developed by the Maxwell Centre at the University of Cambridge for tech innovators and start-up enterprises, which focuses on helping entrepreneurs exploit high-potential business opportunities and introducing core university and enterprise resources of the Cambridge cluster so as to provide trainees with opportunities to dialogue with senior managers and investors from renowned international tech firms and to put the innovative ideas into practice.

Focusing on the understanding of values, business models, marketing strategies, fundraising, financial management, team building, IP strategies and commercialisation strategies, and integrating advanced innovation concepts with local demands, the 2022 Impulse Programme offers customized modules for Chinese trainees. Mentors and senior business experts in both Nanjing and the UK have been invited to share their experiences with trainees through both online and offline activities, including workshops, group learning, one-on-one seminars and lectures on innovation and entrepreneurship. We aim to help entrepreneurs establish and develop a social capital network, make innovation more scientific and feasible, and application more practical, and promote the development of Chinese trainees in an all-around way.



On the afternoon of May 26, the fourth International Technology Roadshow Series of CUNJC were successfully concluded in an “online + offline” hybrid format. The roadshow was co-organized by the CUNJC and Nanjing Overseas Collaborative Innovation Center (Cambridge, UK).

The roadshow has brought together entrepreneurs, investors, people from industries, higher educational institutions, government agencies and other actors of technological innovation. Present at the roadshow were Ms. Jane Lu, senior official of the Regional Affairs Office (Jiangsu) of the British Consulate-General in Shanghai, Dr. Chris Pearson, Nanjing Project Manager of the University of Cambridge, Shang Zhenbai, Deputy Director of the Nanjing Jiangbei New Area Industrial Technology Research and Innovation Bureau and staff members responsible for scientific and technological innovation from Nanjing Jiangbei New Area Industrial Technology Research and Innovation Park. Albert Wu, General Manager of CUNJC hosted the roadshow.

Representatives from more than 40 first-tier and local investment firms, including Fosun USD Industrial Fund, Linear Capital, Co-win Ventures, Yuanhe Capital, Innoangel Fund, Monolith, Trusture, Jiangbei Jiakang Fund and Lanpu Capital, were invited to the event to interact with our guests in the Q&A session, make professional reviews on the projects and offer helpful feedback.

Many forward-looking projects, which were in line with the research interests of the University of Oxford and the University of Cambridge, were introduced at the roadshow, including “Myriofoam: High-Performance Cooling in a Small Space”, “MimiCrete: a Bionic Self-healing Building Materials Based on 3D Printing”, “Yuyuan New Energy: Intelligent System for Low-concentration Coal Mine Methane Power Generation”, and “OXsIGHT: Smart Bionic Glasses”. These innovation projects covered a variety of important areas, such as new materials, machine learning and computer vision, carbon peaking and carbon neutrality, green building and sustainable development.



On the afternoon of April 14, the inauguration ceremony of the first Expert Advisory Committee on IC and Life and Health Industry Development of Nanjing Jiangbei New Area was held at the Yangtze River International Conference Centre of Nanjing Jiangbei New Area. Professor Daping Chu, a tenured professor at the University of Cambridge and CEO and Academic Director of CUNJC, was invited to the ceremony. 11 experts and scholars from renowned universities and leading enterprises would serve as a reliable “think tank” for the development of leading industries in Nanjing Jiangbei New Area, supporting Nanjing Jiangbei New Area to gain more innovation and entrepreneurship results. Previously, Professor Daping Chu has been appointed as the ambassador of Nanjing “Brain Bay” International Talent Block.

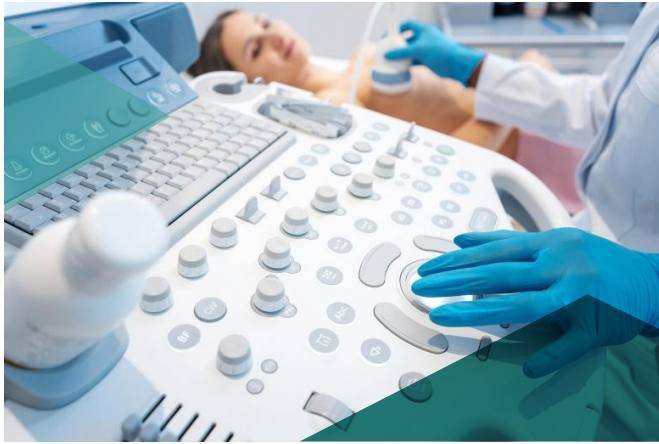


2 RESEARCH TRENDS

On May 3, the project team of “High Power Density DC Converters of 48V Power Supply Systems Used for Data Centres” obtained the invention patent from the State Intellectual Property Office for its scientific achievements. The research team has realized zero-current-switching (ZCS) and dead time for zero-voltage-switching (ZVS). The ZCS and ZVS techniques can significantly reduce losses of switching so as to improve efficiency, which contributes to a power density of 4,700W/in³ and a conversion efficiency of over 99.3% from 48V to 12V and 97.6% from 48V to 4V.

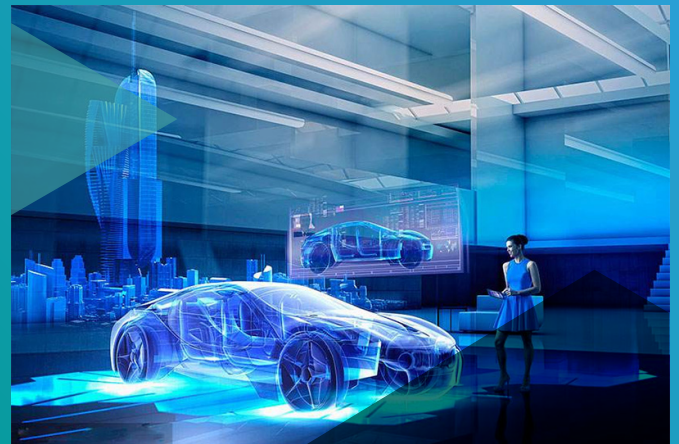
Led by Dr. Long Teng, an associate professor at the University of Cambridge, the project relies on the Centre and proposes a new type of DC-DC converter topology and its derivative structure, which is especially suitable for a 48V DC power supply system.





In January, CUNJC signed a research cooperation agreement with Nanjing University on “Multi-modality and Hybrid 3-D Ultrasound/Photoacoustic Imaging System”. The project focuses on speech processing and control applications, computer vision and robotics, as well as medical imaging. The main research interests of this project include 3D ultrasound acquisition and visualisation in CT, ultrasound deconvolution and stiffness imaging, as well as estimation of the thickness of cortical bone, which will design and develop novel reconstruction methods for the next generation of medical ultrasound imaging systems and further promote the development of clinical medicines as well as science and technology.

In March, CUNJC signed a research collaboration agreement with Southeast University on “Holographic Interferometry System Applied to 3D Surface Analysis”. Hosted by the CUNJC, the project will explore the integration of phase-only liquid crystal on silicon (LCOS) into an interferometry system to relax the tolerance of its hardware optical system, which is compensated by a computer-generated hologram, thereby reducing equipment costs.



In June, CUNJC reached an agreement with Soochow University on “Obesity Associated Metabolic Complications: Pathogenic Mechanisms, Diagnostic Biomarkers and Therapeutic Targets: The Metabolic Health Obesity (MHO) Paradox in China”. The project aims to identify the mechanisms that control adipose tissue plasticity and function, to ensure the implementation of prevention strategies for obesity-related metabolic complications and to study the impact of obesity on the hepatic lipid network that causes fatty liver. The results of the study will help identify the molecular targets required for therapeutic interventions and form a new theory for providing therapeutic strategies by identifying obesity-related metabolic diseases.

3 COOPERATION AND EXCHANGE

On January 12, Mr. Anthony Myers, Head of Digital, Data and Cyber Policy at the British Embassy in Beijing, Mr. Stephen Brennan, Consul for Science and Technology of the British Consulate General in Shanghai, Ms. Bronte Zhang, Science and Technology Officer of British Consulate General in Shanghai, and Ms. Jane Lu, Senior Officer of the Regional Affairs Office (Jiangsu), visited the new site of CUNJC and learned about the latest development of scientific and technological innovations in the Centre. Professor Daping Chu, Academic Director and CEO of CUNJC, presided over the meeting online, and Albert Wu, General Research Manager of CUNJC, attended the meeting at the Centre. Both sides had in-depth discussions on international exchanges, scientific research cooperation, and innovation transformation.



On February 18, Du Rongyi from the Talent Affairs Office of the Division for Relations between the Party and the General Public of Nanjing Jiangbei New Area and his delegation visited the new site of CUNJC. A talent policy sharing session was organized to expound on the talent policies in Nanjing Jiangbei New Area and also to contribute to talent development in the Centre. Staff members responsible for investment promotion and scientific and technological innovation in Nanjing Jiangbei New Area Industrial Technology Research and Innovation Park participated in the sharing session. Albert Wu, General Research Manager of CUNJC, presided over the session. Present at the session were also the research project staff and members of the operation team, as well as heads of enterprises settled in the park, including ReaVis and Nenglixin Technology.



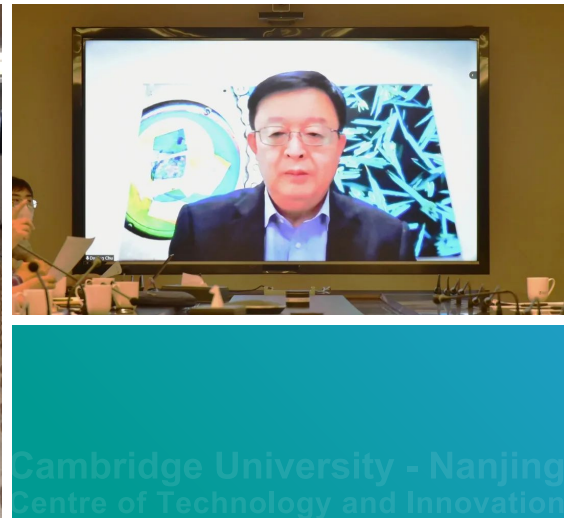
On April 25, Mr. Daping Chu, a tenured professor at the University of Cambridge, and CEO and academic director of CUNJC, was invited to Zhuzhou, which is known as “the capital of electric locomotives in China”, to attend the “CRRZ Zhuzhou Institute Science and Tech Festival 2022”. On behalf of the Centre, Professor Chu signed a memorandum of cooperation with CRRZ Zhuzhou Institute Co., Ltd. (“CRRZ Zhuzhou Institute”). Focused on the theme of “Transportation and Energy Innovation and Integration”, Professor Chu delivered a cutting-edge academic speech on the topic of “Head-Up Display (HUD) and Immersive Driving”.



On May 11, Mr. Cao Sulin, former Deputy Director of Jiangsu Provincial Department of Science and Technology, and Director of Jiangsu Center of International Technology Transfer, and Mr. Jiang Han, Head of Southeast University National Science Park and Head of Association of Jiangsu Province Science and Technology Business Incubators, visited the Centre. Mr. Cao and his delegation visited the exhibition hall of the Centre, learned about the Centre’s development plan, research projects and industrial transformation in detail and had an in-depth discussion on international technology transfer and the transformation of project results with Professor Chu.

On May 27, the “2nd China Carbon Neutral Summit 2022” was successfully held at Nanjing Tech University. The summit removed the geographical gap between the east coast of the Atlantic Ocean and the west coast of the Pacific Ocean. It was jointly organised by the State Key Laboratory of Materials-oriented Chemical Engineering of Nanjing Tech University and the CUNJC, which aimed to discuss the latest research progress in carbon peaking and carbon neutrality. Experts and scholars engaged in relevant fields from China and the UK were invited to join the summit online, share their experiences and discuss future cooperation.

Qiao Xu, President of Nanjing Tech University, Xing Weihong, Vice-President of Nanjing Tech University, and Daping Chu, Tenured Chair Professor at the University of Cambridge and Academic Director of CUNJC, attended the summit.



On June 28, Nai Kang, Director of Office of Global Engagement, Nanjing Tech University, and Mr. Zhou Zhi, Director of Nanjing Tech University National Science Park (Technology Transfer Centre), visited CUNJC. Albert Wu, General Manager of CUNJC, briefed them on the Centre and the implementation of activities empowered by scientific and technological innovations in the Centre. In addition, he proposed tentative ideas on how to cooperate with universities. Both sides exchanged opinions on the work related to development empowered by scientific and technological innovations, talent training and pilot programme empowered by IP, and discussed future cooperation modes.



4 WORK COLLABORATION



As the most important public engagement event at the University of Cambridge, the Cambridge Festival 2022 took place between 31 March and 10 April, 2022 with a mixture of 350 online, on-demand and in-person events covering all aspects of the world-leading research at Cambridge from health and environment to discovery and society.

As a support platform of the University of Cambridge in China and a research institute dedicated to science and technology innovation, CUNJC launched a series activities of “Cambridge Festival 2022” to make the first-hand scientific information on the University of Cambridge available to readers.

On May 9, Ms. Chen Chanmei, Deputy Secretary of the Party Working Committee of Nanjing Jiangbei New Area, and Mr. Nie Yongjun, Director of Science and Technology Innovation Bureau, Management Committee of Jiangbei New District, visited the Centre to learn about the operation since its transformation from a service provider to a research and innovation park, and exchanged opinions on the future development of the Centre. Prof. Daping Chu introduced the adjustment of CUNJC’s development layout and business planning, while Secretary Chen Chanmei offered guidance and suggestions on the Centre’s direction, objectives and models of development.



On May 10, the Centre organized a seminar on management-related issues, which was attended by both Chinese and British management staff. During the meeting, they looked back on the history of the Centre and its current development, and shared respective visions of future cooperation and other matters related to the operation of the Centre. A basic consensus was reached on management-related issues.




On the afternoon of May 11, “Applying to Cambridge: Admission Event for 2023 Undergraduate Study” was successfully concluded. The event was co-organised by Cambridge Admissions Office, CUNJC and Nanjing Overseas Collaborative Innovation Center (Cambridge, UK). Professor Daping Chu, Academic Director and CEO of CUNJC, delivered a speech to young students. Olivia Mathewson, Regional Head (East Asia) of Cambridge Admissions Office, explained more about the advantages of the University and the online process of applying for undergraduate admission programmes. A number of Cambridge alumni from engineering, mathematics, economics, natural sciences, humanities and social sciences shared their experiences at Cambridge and helped students to analyse their target majors.

This event has attracted nearly 200 teachers and students from senior high schools. Provided that all requirements pertaining to epidemic prevention and control are met, about 50 teachers and students from Nanjing Foreign Language School, High School Affiliated To Nanjing Normal University, Jin Ling High School, Nanjing International School, Yuhuatai Senior High School and Nanjing Thomas School participated the event on-site. Moreover, more than 100 teachers and students throughout the country attended the event online.



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