



JOINT NEWS RELEASE

Singapore, 7 June 2023

NTU Singapore and Delta Electronics set up S\$24 million corporate lab for advanced robotic technologies

Nanyang Technological University (NTU Singapore) and **Delta Electronics**, global provider of IoT-based Smart Green Solutions, have established the **S\$24 million Delta-NTU Corporate Lab for Advanced Robotics**, continuing their close collaboration in research & development for advanced technologies.

The lab, supported under Singapore's National Research Foundation's Research Innovation and Enterprise (RIE) 2025 plan, will develop over three years next-generation technologies aimed at overcoming labour shortage challenges for the manufacturing and intralogistics - the logistical flows of goods and materials that take place on a company's site – industries.

Collaborative robotic systems are set to become a staple as businesses transit into Industry 5.0, and as the world grapple with a manpower crunch arising from an ageing workforce and declining birth-rates. Such systems include human-touch inspired robots that can adjust their grip to pick up a range of materials, from fragile glassware to volatile chemicals, and smart sensing, radar and 3D sensors systems, which allow autonomous mobile robots (AMRs) to operate in a dynamic environment with human traffic like hospitals and warehouses.

The joint lab was launched today in a ceremony attended by **Minister of State for the Ministry of Trade & Industry, Mr Alvin Tan; NTU President Professor Ho Teck Hua** and **Delta Electronics Chairman, Mr Yancey Hai**.

Professor Ho said: "This corporate lab with Delta Electronics proves that NTU's research activities are industry relevant. The lab creates opportunities for us to translate our research into impactful, real-world innovations. This is in line with the **NTU 2025** strategic vision, to harness the power of digital and advanced technologies to support the discovery of new knowledge and promote better learning and living experiences."

Yancey Hai, Chairman, Delta Electronics, Inc., underscored: “We are honoured to further our long-term cooperation with NTU following the success in the field of cyber-physical systems, especially as our new joint Delta-NTU Corporate Lab for Advanced Robotics has earned the support of Singapore’s RIE 2025 initiative. We intend to leverage Delta’s smart manufacturing prowess and autonomous mobile robot know-how, as well as our Delta-NTU R&D talent to develop essential technologies for the next-generation of autonomous mobile robots. The innovation milestones of this lab will help multiple industries solve key challenges, enhance Singapore’s long-term resilience, and improve the quality of life of its citizens.”

Deepening collaboration

The establishment of the joint lab marks a new phase of the partnership between NTU and Delta Electronics.

In 2016, the Delta - NTU Corporate Laboratory for Cyber-Physical Systems was launched with a focus on using cyber-physical systems to build technological capabilities for use in Smart Manufacturing and Smart Learning. In 2018, the lab was expanded to accommodate more research activities.

The first chapter of the collaboration has achieved success. Over the five years, the team filed 17 patents, of which 8 have been issued, and submitted over 200 papers to journals and conferences. It also supported more than 140 NTU research staff and graduate students, as well as scientists and engineers from the Delta Research Centre in Singapore.

Notable projects include a universal smart navigation system where logistics robots autonomously move goods around factory floors, and a learning analytics technology to improve learning effectiveness in the education industry. These innovations, which were test bedded on **NTU’s Smart Campus**, are now being scaled up for wider adoption in the industry.

Tzi-cker Chiueh, General Director of the Delta Research Centre, said: “We have secured various patents through our collaboration with NTU Singapore. These achievements demonstrate the high potential for commercialization of the technologies we have developed together. Some of these patents relate to 3D mapping and localization for automated guided vehicles, human tracking and re-identification, and robotic arm manipulation techniques. This intellectual property will serve as a solid foundation for this new lab, and thus, we look forward to working together to meet the complex needs of several industries.”

Co-Director of the Delta-NTU Corporate Lab for Advanced Robotics, Associate Professor Andy Khong, said: “Encouraged by the strong foundation laid in NTU’s initial collaboration with Delta Electronics, we are now ready to deepen the partnership by moving into research & development for advanced robotics. The joint research

team aims to develop cutting-edge solutions that can address real-world challenges in a sustainable manner, in line with NTU's **Sustainability Manifesto** which aims to strengthen global partnership for sustainable development."

Professor Quek Tong Boon, Chief Executive of the National Robotics Programme (NRP), said: "The National Robotics Programme welcomes this NTU-Delta partnership and looks forward to the build-up and commercialisation of more differentiated robotics capabilities for the manufacturing and logistics domains in Singapore and beyond. We hope to see more of such Institutes of Higher Learning - Industry collaborations which form an integral part of our growing robotics ecosystem."

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About Nanyang Technological University, Singapore

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 33,000 undergraduate and postgraduate students in the Engineering, Business, Science, Medicine, Humanities, Arts, & Social Sciences, and Graduate colleges.

NTU is also home to world-renowned autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies, Earth Observatory of Singapore, and Singapore Centre for Environmental Life Sciences Engineering – and various leading research centres such as the Nanyang Environment & Water Research Institute (NEWRI) and Energy Research Institute @ NTU (ERI@N).

Under the NTU Smart Campus vision, the University harnesses the power of digital technology and tech-enabled solutions to support better learning and living

experiences, the discovery of new knowledge, and the sustainability of resources.

Ranked amongst the world's top universities, the University's main campus is also frequently listed among the world's most beautiful. Known for its sustainability, over 97% of its building projects are certified Green Mark Platinum. Apart from its main campus, NTU also has a medical campus in Novena, Singapore's healthcare district.

For more information, visit www.ntu.edu.sg

About Delta

Delta, founded in 1971, is a global leader in switching power supplies and thermal management products with a thriving portfolio of smart energy-saving systems and solutions in the fields of industrial automation, building automation, telecom power, data centre infrastructure, EV charging, renewable energy, energy storage and display, to nurture the development of smart manufacturing and sustainable cities. As a world-class corporate citizen guided by its mission statement, "To provide innovative, clean and energy-efficient solutions for a better tomorrow," Delta leverages its core competence in high-efficiency power electronics and its ESG-embedded business model to address key environmental issues, such as climate change. Delta serves customers through its sales offices, R&D centres and manufacturing facilities spread over close to 200 locations across 5 continents.

Throughout its history, Delta has received various global awards and recognition for its business achievements, innovative technologies and dedication to ESG. Since 2011, Delta has been listed on the DJSI World Index of Dow Jones Sustainability™ Indices for 12 consecutive years. In 2022, Delta was also recognized by CDP with double A List for its substantial contribution to climate change and water security issues and named Supplier Engagement Leader for its continuous development of a sustainable value chain for the 3rd consecutive year.

For detailed information about Delta, please visit: www.deltaww.com