

NEWS RELEASE

Singapore, 19 October 2026

NTU Singapore teams up with Sweden's Ericsson and KTH Royal Institute of Technology to develop AI-powered 6G positioning technologies

Technologies could enable more accurate and reliable positioning of robots and autonomous systems in settings such as hospitals, ports and factories

Nanyang Technological University, Singapore (NTU Singapore), global telecommunications and networks leader **Ericsson**, and Sweden's **KTH Royal Institute of Technology (KTH)** are collaborating to explore new positioning technologies that use artificial intelligence (AI) and 6G, the next generation of mobile networks.

The aim is to develop technologies that can accurately and reliably determine the locations of robots, drones and other autonomous systems in complex indoor and outdoor environments, even when signals are obstructed.

The collaboration reflects the growing research and innovation ties between Singapore and Sweden. Its announcement coincides with **Singapore's State Visit to Sweden** from 19 to 21 October, during which the two governments signed a joint declaration on trusted technology at Ericsson's headquarters in Stockholm.

President of the Republic of Singapore, Tharman Shanmugaratnam and His Majesty King Carl XVI Gustaf of Sweden were among the guests at the signing ceremony today, hosted by Ericsson President and CEO Per Narvinger.

Beyond GPS: AI-Powered 6G

While satellite-based positioning systems such as GPS work well outdoors, they can be less reliable inside buildings or in areas where signals are blocked by surrounding structures.

Unlike GPS, which relies on satellite signals, **cellular positioning** uses signals from mobile networks to determine location. The researchers aim to improve the accuracy and reliability of this approach by combining established methods with AI.

The new technologies could be applied in sectors where robots, drones and other autonomous systems must operate safely around people and critical infrastructure, including healthcare, airports, ports, manufacturing, logistics and smart cities, as well as in emergency response operations.

The research initiative, which begins in November 2026, will combine established positioning methods with AI and **automated antenna calibration** (a process that automatically adjusts for inaccuracies in the recorded positions of antennas to improve location estimates). The initiative will also examine how AI and 6G can improve the accuracy and reliability of positioning technologies, supporting the safe operation of autonomous systems in challenging environments.

NTU Singapore will contribute expertise in robotics, sensor fusion, localisation and machine learning through its **Centre for Advanced Robotics Technology Innovation (CARTIN)**.

Ericsson will coordinate the project and contribute its commercial and research expertise in mobile-positioning technology, test environments, network expertise and insights into the global process of setting technical standards for 6G, while **KTH** will lead research into AI and the development of algorithms.

Professor Shirley Meng, Vice President (Industry), NTU Singapore, said: “Research delivers its greatest value when it moves beyond the laboratory to address real-world challenges. As we look towards the next generation of wireless connectivity, close collaboration between universities and industry will be essential to turning advances in 6G technology into solutions that can be deployed at scale. This initiative brings together NTU’s strengths in robotics and advanced sensing, KTH’s expertise in AI and algorithm development, and Ericsson’s leadership in mobile networks.

“By combining our complementary strengths, we can bridge the gap between research and industry needs, accelerate the development of practical 6G applications, and open up new possibilities for autonomous systems across industries.”

The initiative, which is supported by **Sweden’s innovation agency Vinnova**, also aims to strengthen the research collaboration between Singapore and Sweden and contribute to the development of international 6G technical standards.

Erik Ekudden, Chief Technology Officer, Ericsson, said: “As we evolve from 5G toward 6G, advances in AI, sensing and mobile connectivity will make positioning even more accurate, secure, reliable, and trustworthy helping drones, robots and other autonomous and physical AI systems operate safely in complex environments. By bringing together Ericsson’s technology and standardisation expertise with world-class

research from KTH and NTU, this collaboration will help turn that potential into capabilities with real-world business and societal impact.”

Professor Karl H Johansson, Director of Digital Future, Division of Decision and Control Systems, KTH, said: “Future autonomous systems will need positioning that is not only accurate, but also reliable and trustworthy when conditions are challenging. This project allows us to bring together complementary expertise from KTH and NTU and test new AI-based positioning methods in real-world 5G/6G environments in Sweden and Singapore. Beyond the technology itself, we see great value in building a long-term research bridge between our two countries and creating new opportunities for collaboration in 6G, robotics and autonomous systems.”

CARTIN¹ is a S\$45 million research centre led by NTU Singapore that focusses on developing collaborative and human-centric robotics and autonomous system technologies.

Professor Xie Lihua, Director of CARTIN, NTU Singapore, said: “Autonomous systems are increasingly used in logistics, manufacturing, and service industries, but determining their locations reliably and ensuring they can operate safely in complex, unpredictable environments remain key challenges. This project brings together the complementary expertise of Ericsson, KTH, and NTU to address these challenges. Building on CARTIN’s expertise in robotics, especially in advanced sensing and perception technologies, the project will deepen our existing collaboration with KTH while forging a new partnership with Ericsson.”

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About Nanyang Technological University, Singapore

Nanyang Technological University, Singapore (NTU Singapore) is a premier technological university that develops leaders and creates societal impact through education, research, and service.

¹ Located on the NTU Singapore campus, CARTIN see NTU scientists working closely with robotics research entities at the National University of Singapore (NUS) and the Agency for Science, Technology and Research (A*STAR).

Ranked amongst the world's top universities, NTU has 40,000 undergraduate and postgraduate students in the Business, Computing & Data Science, Engineering, Humanities, Arts, & Social Sciences, Medicine, Science, and Graduate colleges.

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

The University aspires to shape an AI-enabled future. By bringing together global talent across disciplines and combining technology with human creativity, NTU nurtures AI-ready graduates, drives breakthrough discoveries, and forges partnerships that tackle the challenges of our time.

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