

## 2025 International Intelligent RobotSports Cup: Electrical Engineering and AI the 2 Powerhouses Sweep 21 Awards

Campus focus

The “2025 International Intelligent RobotSports Cup,” hosted by the Ministry of Education and organized by National Kaohsiung University of Science and Technology (NKUST), was held on May 24–25 at the gymnasium on the university’s First Campus. Competing against 300 teams from Taiwan and abroad, Tamkang University’s Department of Electrical and Computer Engineering and Department of Artificial Intelligence focused their efforts on 3 key events: AutoRace AI (AI Mini Autonomous Vehicles), RoboSot (Mobile Robotic Arm Challenge), and HuroCup (Humanoid Robot Games). The teams achieved remarkable results, winning first and second places in the autonomous vehicle all-around, first place in one of its subcategories, two first-place prizes in RoboSot, 7 first-place prizes in the small humanoid category, and one first-place win in the large humanoid category—amounting to a total of 21 awards.

The Department of Electrical and Computer Engineering's robotics team, which last year claimed world champion titles for the 13th time in the FIRA RoboWorld Cup’s small and large humanoid events, delivered another impressive performance. In the AI mini self-driving car category, the “Unstoppable” team (「停不下來」), led by Professor Ching-Chang Wong, won first place, while the “Speeding Trio” team (「暴衝三兄弟」) took second, with three additional teams receiving honorable mentions. In the small humanoid category, they achieved a clean sweep under the guidance of Assistant Professor Chih-Cheng Liu, taking home seven first-place awards and one second-place award. In the large humanoid category, the team secured second in race walking, third in marathon, and third overall. A major highlight of this year’s competition was the Department of Artificial Intelligence winning first place in the adult humanoid marathon. Led by Assistant Professor Jaesik Jeong, the third-year students Po-Kai Pan, Kai-Wen Lung, and Yi-An Chen formed the “Minions” team (「小小兵團

」), which clinched the championship in their debut appearance. Additionally, their “Super Cosmic World Invincible Team” (「超級宇宙世界霹靂無敵棒」) received an honorable mention in the autonomous vehicle category.

“Our students, despite having no prior background in mechatronic systems, were able to build a complete robot system from scratch and outperform several graduate-level teams. That’s something we’re incredibly proud of,” said Asst. Prof. Jeng. He explained that HuroCup is the flagship event of the FIRA RoboWorld Cup and is divided into small and large humanoid categories. “Our robots exceed 80 cm in height, and participating in the large humanoid category requires more advanced mechanical design and control techniques. Meanwhile, the autonomous vehicle competition tests a robot’s fully autonomous driving capabilities, including the ability to recognize traffic signs, arrows, obstacles, and respond appropriately,” he explained. This year, the team focused on upgrading their large humanoid robot, adopting a newly designed joint structure, upgrading the core platform to NVIDIA JETSON ORIN NANO, using OpenCR for inverse kinematics, and upgrading the system architecture to ROS2—all of which greatly improved system stability.

Jeng added that the humanoid robot all-around event has long been regarded as the "decathlon of the robotics world," encompassing a wide range of challenges such as sprinting back and forth, penalty kicks in soccer, archery, weightlifting, basketball shooting, obstacle avoidance, triple jump, and marathon. These events are designed to enhance fully autonomous robots’ adaptability and drive technological breakthroughs in complex environments. This time, the “Minions” team stood out in the large humanoid category, demonstrating the team’s strong capabilities in robot design, control, and AI integration.

Postdoctoral researcher Yi-Chung Lin, who has long participated in the robotics team’s development, noted that the annual FIRA RoboWorld Cup in August is their ultimate goal. This May event in Kaohsiung served as a warm-up test run. Due to a compressed development timeline, the Electrical Engineering team only managed to upgrade the lower body of their large

humanoid robot, competing solely in race walking and marathon events. Team captain Kuan-Yu Chen remarked that the biggest challenge was handling unexpected problems on the spot: “The issues we encountered during the competition didn’t happen during lab tests. You have to quickly adapt on-site in order to achieve great results. It’s all part of preparing for the world championship.”













## 「114年國際智慧機器人運動大賽」 淡江大學賽績

競賽	項目	名次	隊名	指導老師
AutoRace	全能賽	第一名	停不下來	翁慶昌
		第二名	暴衝三兄弟	翁慶昌
		佳作	龔龔龔龔隊	翁慶昌
		佳作	我感覺對	翁慶昌
		佳作	壹貳參	翁慶昌
		佳作	超級宇宙世界霹靂無敵棒	鄭在植
	第一分項賽	第一名	暴衝三兄弟	翁慶昌
RoboSot	全能賽	第一名	使用前請詳細閱讀說明書	翁慶昌
	分項賽	第一名	使用前請詳細閱讀說明書	翁慶昌
HuroCup Kid	射箭	第一名	TKU4	劉智誠
	籃球	第一名	TKU6	翁慶昌
	馬拉松	第一名	TKU1	劉智誠
	避障	第一名	TKU2	劉智誠
	舉重	第一名	TKU3	翁慶昌
		第二名	TKU6	翁慶昌
	斯巴達	第一名	TKU5	翁慶昌
	競走	第一名	TKU7	翁慶昌
HuroCup Adult	全能賽	第三名	TKU8	劉智誠
	競走	第二名	TKU8	劉智誠
	馬拉松	第一名	小小兵團	鄭在植
		第三名	TKU8	劉智誠

( 電機系機器人團隊／提供 )