Electrical and Computer Engineering Department's Small Humanoid Robots Triumph Again — 14th Championship Title at FIRA World Cup All-Around

Campus focus

Tamkang University's robotics R&D team participated in the 2025 FIRA RoboWorld Cup and Summit, held in Daegu, Korea, from August 11 to 15, 2025. Among 24 participating teams, Team TKU achieved a clean sweep in the Kid-Size Humanoid Robot Division (HuroCup), winning championships in all three categories—Mobility, Manipulation, and Hybrid—and captured the All-Around (All Round) championship for the 14th time. The team also set a new competition record in the marathon event, making this achievement a remarkable embodiment of the university's development vision, "AI+SDGs=∞."

Guided by Professor Ching-Chang Wong and Assistant Professor Chih-Cheng Liu of the Department of Electrical and Computer Engineering, Assistant Professor Jaesik Jeong of the Department of Artificial Intelligence, and Postdoctoral Researcher Yi-Chung Lin of the Intelligent Automation and Robotics Center, the team competed in both the Kid-Size and Adult-Size Humanoid Robot divisions. Despite the growing number of competitors, the team continued to set new records. In the marathon event, the kid-size robot completed 367 meters in one hour, surpassing the team's own 2023 record and setting a new competition milestone, while also claiming the All-Around championship for the 14th time.

"This success would not have been possible without the university's long-term support," said Prof. Wong, who expressed gratitude to the university and the Department of Electrical and Computer Engineering Alumni Association. He noted that the Alumni Association helped cover additional travel expenses, enabling the core student members to participate in Korea and secure another outstanding victory for the university.

The team has been designing and developing kid-size humanoid robots since 2004. This year, they competed with the 11th-generation FIRA model,

featuring 23 degrees of freedom, with all mechanisms, circuits, and programs independently designed and developed by the team. According to Dr. Lin, each FIRA competition tests the robot's stability and diverse capabilities: "Every year, the difficulty increases, requiring teams to continually improve their robot technologies and apply creativity in order to complete the challenges."

Lin also explained that this year, the competition format for the Humanoid Robot Division was revised. Previously, each of the 10 individual events had separate rankings and awards. Beginning this year, however, the events have been grouped into three categories—Mobility, Manipulation, and Hybrid—with rankings determined by cumulative scores within each category. The overall All-Around ranking is then decided based on the total scores of all events. "Winning the All-Around championship is extremely challenging, much like a decathlon," Lin remarked. "Teams must design suitable mechanisms and algorithms to meet the demands of all events in order to have a chance at the All-Around title."


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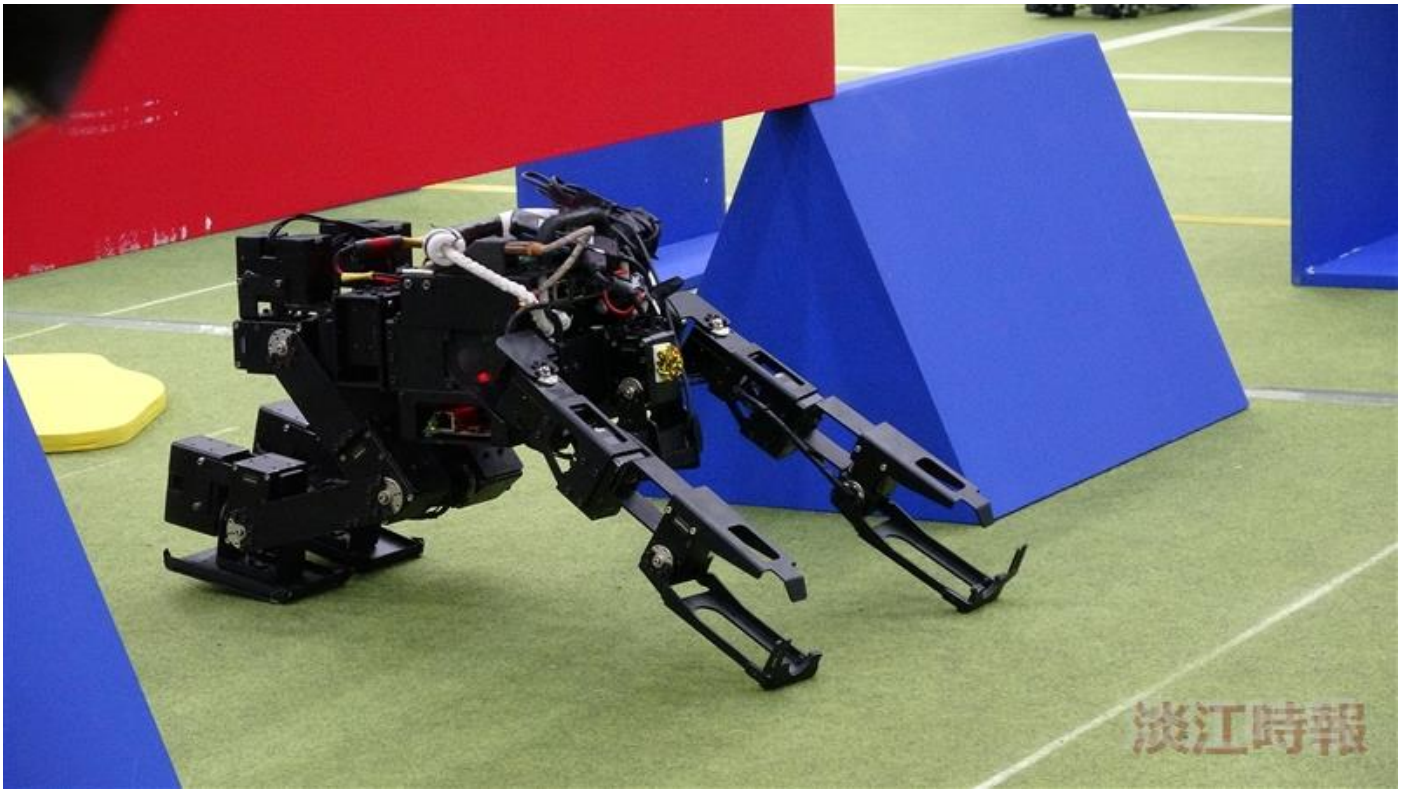
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