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Bonn, Freiburg robot team win soccer tournament

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MUNICH, Germany — The NimbRo team from the Freiburg and Bonn universities has won past Friday (April 25) the German Open Robocup at the Hannover industry fair. The robots from the Rhine clearly defeated the FUmanoid team of the Berlin Freie Universitaet.

During the play-off in the 'humanoid' robot class, the winning team showed clearly superior performance: After the score had reached 10:0 for the NimbRs, the challengers from Berlin threw the towel. The NimRo robots showed played in a very coordinated manner", lauded team coach Sven Behnke from the Bonn university. "We are very happy we could defend our position we gained last year."

In robot soccer, the rules get tightened each year in order to keep pace with the technological advancement. In the current year, for the first time the teams embraced three robots. In comparison with last year's rules, the field has been enlarged and the field of sight for the individual robots has been restricted to 180 degrees. The game lasts 20 minutes.

According to Behnke, his robots clearly outran their counterparts. Already in the technology competition, his robot 'Lothar' transit a show-jumping course at less than half the time than the runner-up.

Compared to human soccer, players, the robots move relatively slow; Lothar achieved a maximum speed of 0.5 meters per second. However, the technology has made significant advances since the latest soccer world cup in 2006. For instance, the robots can stand up autonomously after they fell over.

The winner robots are equipped with an impressing range of technology. All joints are controlled by intelligent actors, consisting of a motor and a 16-bit Freescale HCS12X microcontroller. In order to coordinate movements, these units are interconnected via an RS485 bus which in turn is connected to the main computer. A PC with 1.3 GHz processor and solid-state fixed disk is the main data processing unit, calculating each move based on the images from three cameras sent to the PC via USB interfaces. In addition, the robots communicate among each other by means of a wireless LAN, Behnke explained. They exchange informations about ball position, but they also can discuss strategic aspects such as each one's role allocation.

The next robot soccer world cup will take place in July in Souzhou. Mr. Behnke thinks chances are good a European team will get the cup.

The long-term goal for the robot soccer designers is clearly defined: By the year 2050, they intend to win against the FIFA soccer world champion. "We admit we are far from this target, Behnke said. "But in this fast-moving technology world, it should not be impossible."