

The UNSW RoboCup 2001 Sony Legged Robot League Team

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Abstract

In 2001, the UNSW United team in the Sony legged robot league successfully defended its championship title. The Sony legged robot (ERS-210) has 20 degrees of freedom, including 3 for each of the four legs and 3 for the head. The primary sensor is a colour CMOS camera mounted in the robot's nose. The robot is controlled by a MIPS R4000 processor with 32Mb of main memory, as well as other special purpose onboard processors. The system is programmed in C/C++ and once the program is downloaded onto the robot, it is fully autonomous. Programming for a team of robots to play soccer requires the construction of a vision system, a method for localisation, programming all the locomotion and, of course, the game play strategy. All these elements must be fully integrated and must run within very tight real-time constraints. While the main effort in last year's competition was to develop sound low-level skills, this year's team focussed primarily on experimenting with new behaviours. An important part of the team's preparation was playing practice matches in which the behaviours of the robots could be studied under actual game-play conditions. In this paper, we describe the evolution of the software, including descriptions of the vision system, localisation, locomotion and strategy.