

Development of Artificial Intelligence for Legged Robots on RoboCup Environment (Prof. T. Arai and R. Ueda)

RoboCup (robot soccer world cup) is nowadays an important standard problem for development of artificial intelligences that act in this actual environment. Team ARAIBO, the united team of Univ. of Tokyo and Chuo Univ., has participated RoboCup four legged robot league since 1999. This robot uses quadruped pet robots ERS-7 made by SONY. Team ARAIBO has achieved 2nd and 3rd prizes on the technical challenge that is held with soccer games.

We have handled some kinds of elemental research that enables robots to work in the real world: motion planning with dynamic programming, vector quantization of the result of dynamic programming, modification of particle filters for noisy sensor readings, and real-time Qmdp value method for decision making under uncertainty of sensor readings. Moreover, we have developed software for adjustment of color recognition, auto-generation algorithms of gates, and a simulator that can simulate the characteristics (noise, blur, and so on) of color cameras.

Our current interest is to make ERS-7s be home use with the results on RoboCup.

Keywords: RoboCup, Pet Robots, Dynamic Programming, Vector Quantization, Particle Filters

References

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Fig. 1 ERS-7

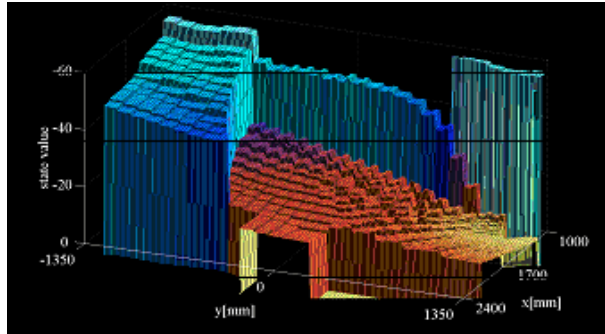


Fig. 2 value function for goalkeeper behavior



Fig. 3 Soccer Simulator