

## **A survey on team strategies in robot soccer: team strategies and role description**

### **Abstract**

This survey paper starts with a basic explanation about robot soccer and its systems, then will focus on the strategies that have been used by previous researchers. There is a time-line of described robot soccer strategies, which will show the trend of strategies and technologies. The basic algorithm for each robot, that is described here, morphs from just simple mechanical maneuvering strategies to biologically inspired strategies. These strategies are adapted from many realms. The realm of educational psychology, produced reinforcement learning and Q-learning, commerce produced concepts of market-driven economy, engineering with its potential field, AI with its petri-nets, neural network and fuzzy logic. Even insect and fish were simulated in PSO and have been adapted into robot soccer. All these strategies are surveyed in this paper. Another aspect surveyed here is the vision system trend that is shifting from global vision, to local omni-directional vision, to front-facing local vision, which shows the evolution is towards biologically inspired robot soccer agent, the human soccer player.

**Keywords** — MiroSot, robot soccer, team strategy, role description, ownership zone