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Abstract

A MULTI AGENTS CONTROL APPROACH TO ROBOT SOCCER
COMPETITION

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Robot soccer is a typical test-bed for studying multi agents control, because it can offer an real-time and dynamic environment appropriate for this research, hence more and more researchers pay attention to it recently.

Generally, a robot soccer system consists of four main subsystems as: robot subsystem, vision subsystem, communication subsystem and decision-making subsystem. In this thesis, we choose a 3 vs. 3 robot soccer system to be a research object.

At first, we discussed a scheme of playing robot soccer. This is a Three Layers Decision-making Model including basic behavior layer, trajectory planning layer and coordination layer, which was invented by scholar of Korea.

Moreover, we wish the specification and programming of multi agents behavior that should be as concise as possible. Regarding the related research work, we know that AUML can assume the responsibility, so we shall introduce how to apply AUML to specify the strategy architecture.

Since robots are built to accomplish complex and difficult tasks that require highly non-linear motions, we shall tackle a trajectory tracking issue in this thesis. Therefore a method of using cubic polynomials to represent a motion profile is developed.

Key words: Robot soccer, Multi agent control, Three Layers Decision-making Model, AUML