

Team Description of Helli-Mersad 3D 2005

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Abstract. After introducing 3D Soccer Simulation field to RoboCup competitions, Allameh Helli High School, having good experiences and results from participating in last years' 2D Soccer Simulation competitions, decided to focus on the new field. *Helli-Mersad 3D 2005* is our first attempt toward this aim. In this paper we present the works we have done so far and the works to do in future.

1 Introduction

Soccer Simulation in RoboCup provides a wide range of works to do. In the last 5 years we have made many different efforts to have a powerful team in 2D competitions. But when the problem switches to a 3D environment, there are many more complex and pleasant works to do. Now we should put all we have done before on 2D competition one side, and try to do them in the 3D environment from base again. This year, at the first step we are trying to have a reliable base team.

To have a powerful team, we need good tactics, and good agents to implement those tactics. Because of possible changes in the Soccer Server that may cause teams to do many things from scratch again, we preferred to work on a reliable base first, and use simple decision-making processes.

In the rest of this paper, we first take look at world modeling of our agents and basic skills implemented for them. Finally, the conclusion and works to do in future are given.

2 World Modeling

One of the important parts of our base is its world model. It is designed so that each agent will be able to access precise information about all objects in the simulation, reliably and simply. Besides being a data repository, a good world model should be able to make these data as accurate as possible. Position, velocity and acceleration of objects in the field are one of the most important data saved in the world model and their accuracy is vital for the agent to perform its skills and decision-makings accurately.

To do this task, each agent uses the flags' relative positions in the current cycle, and its calculated locations in the last cycles to estimate the movement

equation of itself. Then using this equation, it computes its location, velocity and acceleration in the current cycle. After that, using the relative positions of other moving objects in the field and its calculated location, the agent determines the position, velocity and acceleration of other objects, almost in the same way. Using this method, agents could determine the position, velocity and acceleration of all objects in the field almost accurately.

3 Basic Skills

As mentioned earlier, our concentration this year, was on implementing a reliable base and efficient basic skills for our agents. This is, firstly, because we decided to have a robust base to be able to work on it later, and, secondly, because the Soccer Server is due to big changes in the near future, which forces higher level design to change completely.

We have tried, first, to have some simple basic skills, such as *moving to a point*, *going behind the ball*, *going near the ball to shoot to a definite target*, etc. After that some more complex skills such as *shoot*, *dribble*, *pass*, *intercept*, etc. are implemented. We have also implemented a simple *positioning strategy*.

4 Conclusion and Future Works

We have worked on a simple but efficient base team that will be the base of our future works. It was important to have a reliable base to implement some tactical, and strategic plans. In addition to these reasons, possible big changes in Soccer Simulator forced us to work on a base and basic actions more.

In the future, our first aim is to extend current skills of the agents and make them more efficient. The second and most important thing to do is working on agents' decision-making and different strategies that could be applied to the team.