

YowAI2005 Team Description

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Abstract. In this paper we describe concepts and features implemented or implementing to YowAI for 3D simulation league. YowAI2005 is a 3D soccer simulation team based on the sample agent called “Agenttest” which is included in the rcssserver3d package. One of the goals of YowAI2005 is to port functions and libraries from YowAI for 2D simulation.

What’s YowAI?

YowAI is a 2D soccer simulation team[1]. The target of the YowAI is realizing “human-like agents”. YowAI in the 2D simulation has some features:

Short Shout Short shout is a communication form used in real (human-human) soccer games. In short shout, agents exchange abstract messages each other. If an agent hears a message, the agent detects the speaker’s intention. In restricted communication in the 2D simulation, short shout is a sufficient communication form.

High-quality Skill To realize various functions, high-quality basic skills are important. In YowAI for the 2D simulation to achieve high-level team plays and correct situation recognition, some basic skills (dribbling, shooting, etc.) and world modeling are enhanced.

Portation from 2D Simulation to 3D Simulation

When we port the agents in the 2D simulation to the 3D simulation, we must consider some differences between the 2D simulator and the 3D simulator. The differences are, for example, existence or nonexistence of the communication method used for the agent-agent communication, specification of the agent, and physical law on the soccer field. But for effective use of resources in YowAI for the 2D simulation we are trying to port libraries from YowAI to Agenttest. For example, judging situation, and calculation of agents’ velocity.

Basic Skills

To win the game, basic skills for playing soccer are absolutely imperative. We have implemented some basic skills which are needed for playing soccer. For example, effective ball kicking, and more intelligent world modeling.

Ball Kicking

Under the current 3D simulator, some skills are needed if the agent try to kick the ball.

- Run around the ball.
- Figure out if the ball, the player and the kick target are in the same straight line.
- When a player approach to the ball, the player changes his velocity to effective one.

Fig.1 shows how an agent move to kick the ball toward the kick target. In this figure, the agent will kick the ball toward the kick target (at the lower left), but the agent, ball and kick target are not on the same straight line. So the agent have to move to the kick point (In Fig.1, upper right) along the line with moving line.

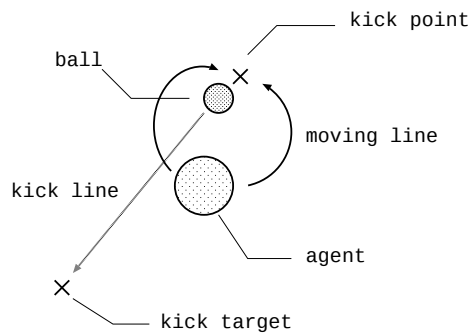


Fig. 1. Run around the ball to kick

In the YowAI 2005, We implemented this behave to kick the ball.

World Modeling

In Agenttest, world modeling is not sufficient, and Agenttest does not clear circumstances. So, in YowAI2005 we improved the world modeling. We have implemented the following functions to Agenttest:

- Recognition all players' and ball's coordinates.
- Save past objects' (ball, players) coordinates and guess next these coordinates.

Future Work

These are our future works to do.

- Improve implemented basic skills.
- Implement advance skills needed for playing soccer (i.e. dribbling).
- Implement cooperations among players.

References

1. Shinichi Takahashi, Takuya Ako, Yasuyuki Yamazaki and Ikuo Takeuchi: “YowAI2004 Team Description”, RoboCup 2004 team description, Lisbon, Jun 2004.