

YowAI2004 Team Description

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Human-like Agent → YowAI

The target of YowAI2004 is realizing “human-like agents”. A human-like agent is an agent which makes its own action decision and cooperation with other agents by a similar way as a human player takes in actual soccer. To achieve this goal, YowAI2004 has been focusing on the following points.

1. Efficient method to cooperate with other agents with minimum communication (Short Shout).
2. Correct understanding of tactical situation and opponent’s action.
3. Basic skills and world modeling to realize high-level action.

Short Shout

Under the restricted communication, YowAI2004 agents cooperate with each other by “short shout” like humans. Since a short shout uttered by a human player well abstracts particular situation at an instant of a game, it can be the means of sufficient communication that uses only several bytes of information. YowAI2004 agents use this short shout not only for short tactical terms, but for sharing information without using any cipher or data compression.

Short Term Tactical Shout A player can progress the tactical situation of the team, and give the addressed player a hint to the tactical judgment and action selection. The judgment or action selection is highly recommended, but not forced.

Information Shout A player can request other players’ information about where particular object is. The player that knows the answer replies to the players’ request in a few bytes by telling rough information about the object. This sort of shout is also used in human actual soccer.

Middle Term Tactical Shout The difference of “middle term” and “short term” is that a short term tactical shout causes a change of a high priority judgment or action, but middle tactical term shout does not. Instead, a middle term tactical shout sets roles and subgoals of several agents. Subgoals in this term are not so big as “Get a goal!!”, but small as “make a space in front of player number 10”. The players included in the term will take a role designated by the term and make a judge or action for the subgoal in the term.

History Information

When an agent determines its action, it depends on its current world model. Therefore it is not easy to recognize tactical situation, team’s strategical term and opponents’ action, formation, and so on. To resolve these problems, YowAI2004 implements an advanced recognition mechanism of situation and actions by utilizing “history information” such as time-series of world model information. With history information each player can recognize tactical situation easily, estimate opponent players’ positions and estimate what type of heterogeneous player each opponent is.

High-quality Skill

Needless to say, high-quality basic skills and world modeling are also important to realize above-mentioned functions. YowAI2004 has been improved in some basic skills and world modeling, such as dribble, shoot, velocity calculation, ball move prediction, ball catching, and so on. These basal modification helps a high-level team play and correct situation recognition.

Future Work

These are our future work that we are planning to do.

- Extend the recognition method for the following points.
 - Enormously complicated situations.
 - Opponent tactics.
- Implement long term tactical strategy.
- Increase the variety of short shouts.
- Implement dynamic strategies using a coach client.