

Coach Description of TsinghuAeolus

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Abstract. TsinghuAeolus, the RoboCup simulation team, which won the simulation league champion in 2001, 2002, and runner-up in 2003, is now mainly focus on the advice-taking mechanism of the decision-making of autonomous agents. So it's the first time we register for the coach competition. In this paper, we will describe the advice-taking mechanism we have used in our coach.

1 Introduction

We had an online coach in TsinghuAeolus2003 team, but it worked rarely. Besides changing the heterogeneous player types, the coach only announced opponent's formation via freeform strings. In 2004, we plan to develop our coach in two ways: firstly, we will establish more opponent modeling to learn more information about the opponent; secondly, The online coach will acting as a domain expert, choosing the appropriate advice from the given advice-pool. We'll explain both of them in the next sections.

2 Opponent Modeling

Currently we model the opponent's formation by recognizing the relation of agents' position and ball's position. It is frequently noticed that each agent of the team has fixed movement area and fixed moving route. The collection of these statistics will help our agents to locate opponent ones on the ground without searching for long time. What we plan to do next is predicting opponent agent's action a period of time ahead, by analyzing its usual action. When the opponent gets the ball, the agent has its accustomed way to deal with it. Our coach will collect the information of this kind which will increase the precision of our agents' estimation.

3 Advice Choosing & Giving

The mechanism of the domain expert's advice we adopted last year is to predefine all the advices in the autonomous agents before match, and agents would take actions from the advice during the predefined scene without any feedback or revision. It is only the preliminary mode of advice-giving. This time, we'll no longer put the advice in the agent's program (actually, in the coach competition, we don't use our own agents); instead, an adjustable advice-pool is created. All pieces of advice in that pool are originally given by the domain expert. The trainer will use such advice to coach a team for training, in order to find out the suitable situation for each advice. Our online coach uses this advice-pool during the match, chooses advice from the pool and gives them to the proper agents. The coach can change the priority of advices in the pool by the effects of them. As the coach can get all the information on the ground, agents' feedback is not necessary here. Although until now, it is impossible for our coach to generate advices, the ultimate goal of our research on coach is to fully manage the advice-pool automatically.

References

1. Jinyi Yao, Ni Lao, Fan Yang, Yunpeng Cai and Zengqi Sun, Technical solutions of TsinghuaAeolus, in RoboCup Symposium 2003, Padova, Italy
2. Fan Yang, A Local Strategy of Multi-Agent Collaboration in RoboCup Simulation, in China Robot Competition Symposium 2003, Beijing, China