

Oulu 99

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1 Introduction

Oulu99 team was formed by students of University of Oulu, Finland as a part of student's Software Project course. Entire software was designed and written from scratch, even though there was source code available from previous Oulu teams. as a result, Oulu99 finished on 13th place in Robocup'99.

2 Team Development

Team Leader: Jarkko Kemppainen

Team Members:

Mr. Jarkko Kemppainen
– University of Oulu, Finland
– graduate student
– attended the competition

Mr. Jouko Kylmäoja
– University of Oulu, Finland
– graduate student
– attended the competition

Mr. Janne Räsänen
– University of Oulu, Finland
– graduate student
– attended the competition

Mr. Ville Voutilainen
– University of Oulu, Finland
– graduate student
– attended the competition

Web page <http://ee.oulu.fi/~mysti/robocup>

3 World Model

Clients had two coordinate systems:

- Absolute coordinates, where 0,0 is in the middle of own goal, and angle 0 is from own goal to opponent goal.
- Relative coordinates, where 0,0 is the player position, and angle 0 is directly forward from players body position.

All objects had speed vectors which are estimated to any point of time in past or in future.

Client had a memory of estimated position for each object in the field and updated this information when sensory information arrived. Otherwise the position was estimated and the probability of this information decreased as a function of time.

Ball position and referee calls played most important part in determining the current world state. Clients had different behavioural modes depending on current play mode.

For shooting purposes, a special module calculated optimum shoot paths from own position, ball position and enemy player positions. Also, enemy goal posts played an important role in this algorithm.

To achieve the most efficient learning of Soccer Server system, Team Oulu99 did not use any of the available source codes or libraries.

4 Communication

Players marked the free ball by applying movement towards it. This was a signal to other clients but one to ignore the ball. By this algorithm, ball catcher and backup player were deployed.

5 Skills

Clients had several different moving modes:

- Move with ball
- Move without ball
- Stay between two objects
- Shoot to point
- Shoot to goal
- Catch ball (goalie)

Dribble was used only when turning, it was not used for protecting the possession.

6 Strategy

High level strategy was fast point-to-point passing. Each client had a weighted position depending on ball position and play mode. All clients knew all other clients' should-be-position and could give blind passes to these coordinates.

7 Special Team Features

Team Oulu99 used different approach to determining own position than most of the other teams. Position was determined from all seen flags using distance as a weight of reliability. With extensive testing optimum values were found and the position determination was very accurate. It was also very unsensitive to noise and view blocking objects.

8 Conclusion

The final result, 13th, was very inspiring for the whole team and our sponsors, University of Oulu, Finland. We wish to thank Jukka Rieki, our inspirator.