

Team Description Paper

RoboCup IranOpen 2009

Mixed Reality League

WF Wolves

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Abstract. This is the Team Description Paper of the WF Wolves, the RoboCup Team of the University of Applied Sciences Wolfenbüttel for the RoboCup IranOpen 2009. The Mixed Reality League contains Platform development where we intend to present a Simulator. The Applications and games where we would like to present Bel!Brick. The Soccer Tournament in which we would like to compete with our new 5 vs. 5 Team.

1 Introduction

Our team has been founded in 2007 at this University of Applied Sciences. We participated in the RoboCup 2007 in Atlanta and gained the fourth place in the Mixed Reality Competition. In 2008 this team achieved the third place at the JapanOpen and the third place at the GermanOpen 2008 Mixed Reality Demonstration. At the RoboCup 2008 our team has won the Championship in the Mixed Reality. We have presented the system at various events and fairs since 2007. The team provided many developments to the Mixed Reality, such as the Battery Charger 2008, Programming Adapter, EcoBe!2008 firmware.

2 About the Team

This team currently has nine student team members, from different faculties such as, computer science, electrical engineering, and mechanical engineering. It is organized independently but supervised by the the faculties.

3 Technical Development: Simulator

We are going to present a simulator for the Mixed Reality System. That will hopefully allow more Teams to participate in the League by lowering costs. Besides that it will improve Artificial Intelligence developments in the Mixed Reality. The Simulator uses the Open Dynamics Engine(ODE) which is used in the Mixed Reality Soccer Server as well as in the Simulation League. ODE allows to calculate a near to real Simulation of the physical environment. The big advantage is, that the development can completely be done without having a Physical System - it will just be needed for tournaments. Teams can develop Agents for the Mixed Reality without the need of having a System. An other advantage is, that the simulation process can be accelerated compared to the real system, so Learning algorithms like Q-Learning can be applied way faster.

4 Educational Game: Be!Brick

The team will present various improvements to the Software called Be!Brick. Be!Brick is an educational tool, that allows to create Soccer Agents with a Brick Interface by combining different kinds of Bricks. It is possible to build a complete soccer agent with all the functionality, that is needed to compete in the Mixed Reality. The Visual Brick - Interface allows to create Soccer Agents without any detailed knowledge of any programming language. This is another step for the Mixed Reality League as a smooth step into the RoboCup. The main intention of the Be!Brick project is to provide a good start in the Mixed Reality Soccer Competition.

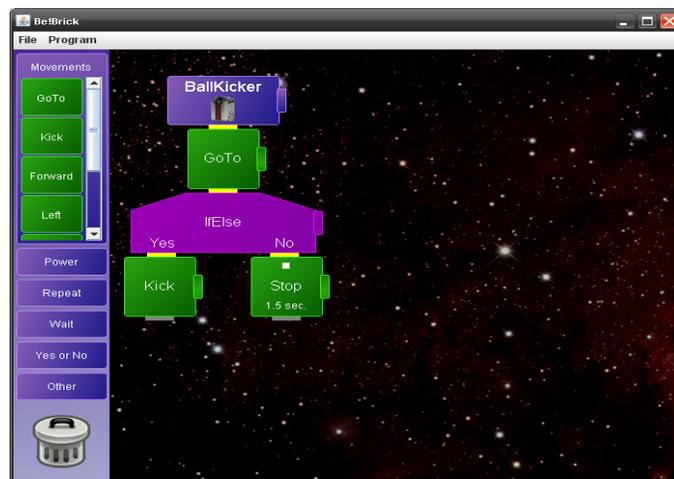


Fig. 1. Be!Brick

5 Soccer Tournament

In the Soccer Tournament we are looking forward in competing with our 5v5 team. The 5v5 Soccer game gives various new elements in tactics and AI, since there are more than two players, with four field players there is allot more Team play possible so the old agents wont be able to compete. There are major changes in tactics movement and "plays". Because there are four field players it is able to divide in offense and defense.

6 Developments by this Team

6.1 Battery Charger for EcoBe!2008

For 2008 we have build a charger with Hirose connectors. So charging can easily be done by plugging the robot to the charger. The new robot version contains two rechargeable batteries each, which are recharged separately by two charge controllers. That is why each charging station has two separate pairs of status LEDs, which displaying: full, charging and damaged.

Another important point concerning the layout of the board is designing it in a way that offers enough space to attach and detach the robots.

6.2 Programming Adapter

We presented a programming adapter for the EcoBe!2008, so it is easy to update programs.

6.3 EcoBe!2008 Firmware

Our team developed the EcoBe!2008 Firmware. This development is essential to the league. The new Firmware supports a wide range of new Functions. The new Command Interpreter supports sending not only one command but a list of commands. This functionality is not used by the soccer server yet. But in the future it will support the communication between Bots and the Server, it is now not necessary to send a command every 55 ms. Which allows more flexibility in the AI.