

EPRA Rescue team
Peyman Yamin
Ehsan Khorsrowshaahi

EPRA_team@yahoo.com

Introduction

About one year ago we decided to work on a rescue team and taking its benefits in order to improve our machine learning design ability. We also found that the robocup competitions are a very good scene that lets people use their thoughts in a way that will, surely, parallel to the technological approaches, result in developing the ability to meet the future world's needs. Thus, considering this goals we started to design a team and now it's almost completed. By this description we briefly discussed about the theoretical algorithms used and the way of implementing them into the team.

Theoretical Background

We used two AI theories in most of our work for design and implementation of our team. First For decision making and better understanding of the disaster space by agents Statistical methods are used and uncertainties are taken into account for faster and more accurate results. Second we used Machine Learning methods for better management of the plan as a whole for unpredictable situations.

As the logic basis of the design, the modal ways are used and possibilities for conditions are considered completely in order to take the best results for using logical relationships.

Applied Algorithms

All agents in the same type have one decision maker (DM) that continuously communicates with them and considers all options of moving and acting of them separately, and sends results to them and though they will do things that are already optimized.

This, surely, have limitations such as the way of sending and receiving messages (communication) for updating every agent's DM, etc.; However, we believe that this is more flexible in real-time simulations and can lead us to better results.

All agents have also an engine that saves the conditions met before and uses them to find similar situations in future; this helps them to confront new conditions in a way that had the best results before in partly similar conditions, for example by choosing between the number of agents that are cleaning up single problem.

As mentioned above all this methods use modal logic basis as their logical rules.