Multi-Agent Programming Contest 2014
—
The GOAL-DTU Team

Jørgen Villadsen, Andreas Viktor Hess, and Øyvind Grønland Woller

Algorithms, Logic and Graphs Section
Department of Applied Mathematics and Computer Science
Technical University of Denmark
Richard Petersens Plads, Building 324, DK-2800 Kongens Lyngby, Denmark

Abstract. We provide a brief description of the GOAL-DTU system, including the overall system design and the tools that we plan to use in the agent contest.

Introduction

1. The name of our team is GOAL-DTU. We participated in the contest in 2009 and 2010 as the Jason-DTU team [1,2], in 2011 and 2012 as the Python-DTU team [3,4] and in 2013 as the GOAL-DTU team [5]. This year's code is a slightly improved version of the code for GOAL-DTU from 2013.

2. The members of the team are as follows:

   - Jørgen Villadsen, PhD
   - Andreas Viktor Hess, MSc student
   - Øyvind Grønland Woller, MSc student

   We are affiliated with DTU Compute (short for Department of Applied Mathematics and Computer Science, Technical University of Denmark (DTU) and located in the greater Copenhagen area).

3. The main contact is associate professor Jørgen Villadsen, DTU Compute, email: `jovi@dtu.dk`

4. We expect that we will have invested approximately 100 man hours when the tournament starts.

System Analysis and Design

1. We will not use any existing multi-agent system methodology.

2. We do not plan to distribute the agents on several machines.

3. We plan to use a decentralized approach for decision making, where each agent attempts to determine what action is best for it and the team. We plan to have some of the agents share potential actions with each other so that they can better coordinate their actions.

4. Our agents use limited communication, only sharing map structure, team and enemy positions, and messages for synchronization and action coordination before choosing actions.

Software Architecture

1. We use the GOAL agent programming language.

2. We use the Eclipse IDE as a development platform.

3. As the runtime platform for the competition we use a suitable Linux system with the newest version of GOAL.

References

1. Niklas Skamriis Boss, Andreas Schmidt Jensen, and Jørgen Villadsen. *Building Multi-Agent Systems Using Jason*. Annals of Mathematics and Artificial Intelligence, 59:373-388, Springer 2010.

2. Steen Vester, Niklas Skamriis Boss, Andreas Schmidt Jensen, and Jørgen Villadsen. *Improving Multi-Agent Systems Using Jason*. Annals of Mathematics and Artificial Intelligence, 61:297-307, Springer 2011.

3. Mikko Berggren Ettienne, Steen Vester, and Jørgen Villadsen. *Implementing a Multi-Agent System in Python with an Auction-Based Agreement Approach*. Lecture Notes in Computer Science, 7217:185-196, Springer 2012.

4. Jørgen Villadsen, Andreas Schmidt Jensen, Mikko Berggren Ettienne, Steen Vester, Kenneth Balsiger Andersen, and Andreas Frøsig. *Reimplementing a Multi-Agent System in Python*. Lecture Notes in Computer Science, 7837:205-216, Springer 2013.

5. Jørgen Villadsen, Andreas Schmidt Jensen, Nicolai Christian Christensen, Andreas Viktor Hess, Jannick Boese Johnsen, Øyvind Grønland Woller, and Philip Bratt Ørum. *Engineering a Multi-Agent System in GOAL*. Lecture Notes in Computer Science, 8245:329-338, Springer 2013.

Acknowledgements

More information about the GOAL-DTU team is available here:

`http://www2.compute.dtu.dk/~jovi/MAS/`