PhD Project Plan

Thomas Gorry

Agent Location Discovery in Distributed Networks
with reference to Agent Patrolling and Agent Rendezvous

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1 Project Outline

The topic of study is in the field of Algorithms with a focus on Distributed Computing. The project aims to carry out research surrounding agents in networks. Mainly this work has emphasis on Agent Location Discovery. We have already had some success with avenues of research in this area with respect to location discovery on the ring using a randomised procedural approach and work has already been started on location discovery on the line or segment. Future directions for this work include looking at deterministic approaches to the problem mentioned above and comparison with our current randomised approach. We will also be looking at more topologies and geometric shapes and we have already briefly looked at tree structures. Our current work has been motivated on aiming towards Agent Patrolling however there will also likely be some migration later in the project to looking at combining this work with Agent Rendezvous in networks. It should also be mentioned that there has been some work we have carried out on Social Network Analysis and there may be some area of research that we may be able to link in with the current plan for the PhD.

2 Introductory Reading List


3 Time Plan

3.1 First Year

October - December:
1. Focus initially on improving understanding of probability and different techniques used in probabilistic analysis.
2. Add finishing touches to research paper on randomised procedures for agent discovery when on the ring.
4. Attend initial meetings with Dollywagon about possible collaboration on Social Network Analysis project.
5. Start looking at randomised procedures for agent discovery on the line.

January - March:
1. Complete PhD Project Plan (15th January).
2. Continue research and software development into Dollywagon Social Network Analysis Project.
3. Research trip to Bordeaux University to discuss possible collaboration and present current research.
4. Conduct research into agent location discovery using deterministic procedures. Starting initially with discovery on the line or segment and looking at the implications of the results of this research in relation to our paper on location discovery on the ring using a randomised approach.

5. Formalise research done on agent location discovery on the line ready for integration with our paper on agent location discovery on the ring.

April - July:
1. Attend the Postgraduate Workshop.
2. Attend Search and Rendezvous conference at the Lorentz Center, Leiden, Netherlands.
3. Further plans for my research will, at this point, involve looking at different topologies and seeing if we can adapt our deterministic and/or randomised approaches to solve the agent paroling problem in these settings.
5. Complete Annual Faculty Progress Report.

3.2 Second Year
October - December:
1. Complete one of the Careers Skills Development options.
2. Look into linking my research to areas such as Agent Rendezvous.

January - March:
1. Prepare and present a poster about my research at the university Poster Day.
2. Anticipate preparation of at least one paper presenting results of research.
3. Possibility of further research visits to other universities or institutions.

April - July:
1. Speak about my research at the Postgraduate Workshop.
2. Complete the Second Year Progress Report.
3. Attend the Second Year Progress Interview.
4. Complete the Annual Faculty Progress Report.

3.3 Third Year
October - July:
1. Possibility of further research visits to other universities or institutions.
2. Anticipate preparation of at least one paper presenting results of research.
3. Give a technical presentation about the project to a specialist audience.
6. Third Year Progress Interview.
7. Complete Annual Faculty Progress Report.
8. Submit an Intent to Submit Form.

4 Taught courses that will be attended

2011/12 First Semester -

- COMP329: Robotics and Autonomous Systems, Prof MJ Wooldridge, Department of Computer Science.

Further Semesters -
There may be other modules that are attended in the future, however none have been arranged as of yet.