

Team Members:
Joshua O'Dell (JO)
Rudra Sharma (RS)

Pre-proposal exploration

1. Trading Agent Competition (TAC) - Suggested by JO

JO and RS reviewed some of the available projects available on their website <http://tac.sics.se/>, however a lot of their testing environments appeared to be offline and we were not able to reduce the scope of the project so we abandoned this project idea.

2. Automatic Regex Pattern generator - Suggested by RS

JO and RS discussed this idea and we had an initial discussion with Dr. Howe via email. We were unable to reduce the scope of this project to just the AI components and so we abandoned this idea.

3. Automated Vacuum Cleaner Study - Suggested by JO

JO and RS discussed this idea first and were able to reduce the scope of the project to AI algorithm implementation. After initial discussion with Dr. Howe, we pursued this project.

Project proposal

The project proposal was jointly written by JO and RS and used google docs to collaborate. Each initially read some papers and attributed their ideas to the project on the proposal.

JO discovered a codebase on github [<https://github.com/raun/Roomba-Vacuum-Robot>] that had a rudimentary implementation of a vacuum on GitHub and proposed using it as a base to RS. Both team members agreed to use this code as a base for the coding of the project.

Project coding and implementation

Project was initially ported from python to Java by RS due to team familiarity with java. Project codebase was hosted on GitHub, <https://github.com/rudrasharma/VaccumRobot> under RS account. JO extended the codebase to use a library, Lanterna, to visualize the movements of the robots. RS wrote the algorithm for Random Robot, Store Map Robot, Store Map with Direction, and Store Explored nodes and Map. JO wrote the algorithms for Store explored, Proximity, and store explored proximity bot. JO wrote the test harness to simulate trial runs and calculate performance.

Project Presentation

Initial template for the presentation provided by RS for the presentation. Each member created and narrated slides on the algorithms they implemented as discussed on coding and implementation section. JO refined and narrated slides related to the project results and conclusions.

Project written report

Initial template using **LaTeX** was provided by JO. Each team member added sections about the algorithms they implemented as noted in the project coding and implementation section. Figures were added by JO. RS and JO members worked on the introduction, implementation, and project conclusion section. The collaboration occurred via github.

Project contribution details

Initial draft written by RS and collaborated by JO and RS using Google Docs.