

Jory Denny

Parasol Labs HRBB 407

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Department of Computer Science and Engineering

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**Title: Roadmap Partitioning**

**Description:** Given a roadmap, (a graph data structure with points as nodes and with edges connecting them) my project consists of determining a “good” algorithm/ the best manner in which to partition any given environment of obstacles in an intelligent fashion. I will not know how the obstacles are arranged, but rather where the roadmap lies in the environment.

**Purpose:** There is a necessity in the Group Behaviors Project to make interesting and complex behaviors such as a territorial predator or for a group search method. The motion planning project needs a better method to partition their environments for feature sensitive motion planning and for more complex motion planning problems.

**Project Goals and Implications:** At the end of the program my goal is to find a good method that will allow for more complex problems and interaction between the agents in the Group Behaviors project.

**Personal Goals:** I wish to gain more experience in research and writing research papers. This will help me accomplish my goal of going to graduate school.

**Approach:** In order to solve this problem I will need to find different algorithms to test. Then I need to create many different environments to test. The next step is to determine a quantified method to analyze the quality of the partitions and compare this quality to the time complexity of the algorithm. After I get results, I need to compare the algorithms to determine if any one algorithm will be applicable to the problem, or determine if certain algorithms work better for certain environments; such as a cluttered environment or an evenly distributed environment. If no single solution is best, I may need to develop a method of analysis for the roadmap and select the best algorithm to divide that specific roadmap. My weekly activities consist of finding algorithms, making environments, testing those algorithms, and analyzing the results.

**Method and Materials:** I need the computers in the lab to run my simulations.

**Work Schedule:**

I plan to work every weekday in the hours approximately from 9-10 and 12-4 or 5 in the afternoon. Though for the second summer session my hours will switch to 10-4 or 5 every weekday. Approximately 25 hours a week.

**Deliverables and Dates:**

Website Started:	June	10
Research Plan:	June	10
Research Abstract:	July	22
Research Poster:	August	3
Research Paper:	August	5
Website Due:	August	5