Undergraduate Summer Research Grant Program 2008

Research Plan

Due: June 12, 2008

Name: Lakshmi Reddy B
Research Advisor: Dr. Nancy Amato

Phone: 979-450-8563
Phone: 979-862-2275

Email: lakshmakr.iiitj@gmail.com
Email: amato@cs.tamu.edu

Work Schedule: 8:00 am to 5:00pm
Lab Location: 458-0424 HRBB

(From 27th May to 1st Aug, 2008)

RESEARCH TOPIC:

K-Nearest Neighbor Search Problem

RESEARCH GOALS:

- To investigate the existing K-Closest methods in our library in order to establish the well connected Road Map for given Start and Goal Configurations of the Robot by connecting the nodes using different Algorithms in a given C-Space and to evaluate the Pros and Cons of each method.

- To implement few new Algorithms for K-Nearest Neighbor Search and compare them with the existing Algorithms.

TASKS:

- To read previous Research Papers and to complete Crash Course on Motion Planning.

- To make myself comfortable with the Code on Motion Planning i.e. With different Libraries, Environments, Experiments, etc...

- To change some specific parameters specified in the code and to observe the effect of these changes on our experiments.

- To evaluate the experiments for different Nearest Neighborhood Environments like Hook, Maze, Wall, etc. and to analyze and summarize the results.

- Finally, to plot the graph for different parameters in the Environment and for different Environments

- If time permits, I would like to implement few new Nearest Neighborhood Algorithms.

- To prepare Final Project Report.
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<table>
<thead>
<tr>
<th>DELIVERABLES:</th>
<th>DATES:</th>
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</thead>
<tbody>
<tr>
<td>Research Topic</td>
<td>10th June, 2008</td>
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<tr>
<td>Initialization of my personal web-page</td>
<td>10th June, 2008</td>
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<tr>
<td>To give an overview on each Research paper and on each Chapter that I have been studying.</td>
<td>Week 1-3</td>
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<tr>
<td>Research Abstract.</td>
<td>18th July, 2008</td>
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<tr>
<td>To make Experiments to test performance accuracy of Different Nearest Neighborhood finders in relation to PRM</td>
<td>Week-7</td>
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<tr>
<td>To analyze and make Graphs on different Experiments.</td>
<td>Week-8</td>
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<td>Finally I have to present my findings in a Presentation, Poster and Paper and describe them on my web-page.</td>
<td>Week-10</td>
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<tr>
<td>+Poster Presentation</td>
<td>28th July, 2008</td>
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<tr>
<td>+Web page finalizing</td>
<td>31st July, 2008</td>
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**SIGNATURES:**

Lakshmi Reddy B.  
Student Researcher  
Date  

Dr. Nancy Amato.  
Faculty Mentor  
Date