Research Plan

Kelli Bacon,

June 9, 2006

Participant Information
Name: Kelli Bacon
Phone: 480 473 9507
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Work Schedule: M - F, 9am to 7pm

Research Advisor
Name: Dr. Nancy Amato
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Lab Location: Bright 407

Research Topic: Generic Graph Generator Library

Research Goals: My goal in participating in a research program is to gain valuable experience in computer science. I have a somewhat limited experience in CS (lower division coding, one abstract data structures course, and one algorithm theory course). I would like to broaden my understanding of CS, which involves experiencing different ways to approach a computing problem. Researching here will also help me see if I would like to go into graduate school someday. My research goal in the Graph Generator group of the Parasol Lab is to set up the framework and get it fully functional for graph generation. Our group intends to implement the properties necessary to create and join graphs. We want to be able to test our graph generator on simple random graphs by the end of our summer project.

Tasks: As an undergraduate researcher, I will be working with Saransh and Harsh on a graph generator project. This project involves setting up an interface for the user to create and manipulate a graph datastructure. We want the user to be able to input how many vertices, if the graph is directed,
etc, but we also want for the user to be able to mutate the graph (i.e., combine two preexisting graphs) and know the properties of the resulting graph. Examples of graph properties are the minimum or maximum degree of a vertex, the diameter of the graph, etc. The tasks of the Graph Generator group are shared. We will all be responsible for documenting, but I am in charge of setting up a template for documentation. Saransh, Harsh and I work together in the common development stage. We have set up a list of the properties we want accomplished and will pick which properties we want to work on. I will be working on the join at vertex and compose no join cases, and then work on the max degree and min degree properties for both directed and undirected graphs. One of my other tasks is to review the code of both Saransh and Harsh before they are allowed to commit it to the common files.

**Deliverables:**
- Website Updates
- Weekly Reports
- Documentation Template
- compose no join
- join at vertex
- property max degree
- property max in degree
- property max out degree
- property min degree
- property min in degree
- property min out degree
- Poster Presentation
- Code (with documentation)
- Tech Report

**Dates:**
- End of each week
- June 16, 2006
- June 23, 2006
- June 30, 2006
- July 7, 2006
- July 14, 2006
- July 14, 2006
- July 21, 2006
- July 28, 2006
- July 28, 2006
- August 4, 2006
- August 11, 2006
- August 11, 2006

**Signature**

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Student Researcher

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Faculty Mentor

2