2013 Summer Research Summary

Wenzhao Sun

I did a summer intern with Amazon.com for the entire summer in order to learn new techniques that are required to improve the quality of our simulation code and reduce unnecessary time that may be wasted during development. With the expansion of our research group, requirements for the quality of the code we produce naturally increase. These requirements include, but not limited to, code modulation, using object oriented principles, version control for projects that have several developers, and being able to effectively publish our code so other researchers will be able to access and evaluate them.

There are four goals that I set before the internship and successfully accomplished during the summer period.

(1) Establishing a standard procedure for code development
Solution: All methods should have comments and a research project should have requirement documentation before development for future tracking and assessment purpose.

(2) Suggesting standard modules for any simulation program
Solution: Using Object-Oriented principles to make all code blocks more easily traceable and maintainable. Every individual objects in the simulation code should be working by itself and pass strict tests before any integration with other code blocks.

(3) Building a version control system for our group so that we can
1), multiple group members could be working on the same piece of code without worrying too much about code confliction
2), we will be able to publish our code online, both for general audience and journal reviewers.
Solution: Best solution for this problem is GiT, a distributed software version control system. I have been using it for the whole summer and believe that would be a great plus if our group could adopt this technique in all codes that we develop.

(4) Introducing software testing techniques to reduce bugs for all group members
Solution: All methods in a code need to be unit-tested before release to others. Otherwise, no one could demonstrate the validity of our code and developers would not guarantee that all code blocks are doing the exact thing they expect them to do.