Project Title: Development of Advanced GUI’s and SOAP-based web services for the SDSC Notebook Project

Relevant URL: http://www.notebookproject.org

No. of Students: 2

Desired budget: $12k

Overall Research Project:
The Notebook project is an initiative to develop a personal computer application to enable researchers to store and share scientific data, as well as providing highly advanced interfaces to network data services such as SOAP-based web services. The project is being supported by Microsoft Research, the R&D arm of the Microsoft software corporation. The Notebook application uses cutting edge technologies such as the C#-based .Net development framework, XML-based interface development components and a relational database that fully supports XML data types. Internal schema mapping components are being developed that will utilize ontologies to automate data mapping. In summary, this is an ambitious endeavor to facilitate advanced data access and data management by knowledge workers and researchers in many domains.

There are several areas of Notebook project development from which the application of REU studentships would benefit, whilst at the same time providing exceptionally advanced, challenging and rewarding experiences for the students involved:

Student Project #1:
The Notebook application will provide bioinformatics developers with a graphical user interface (GUI) development framework, based on the use of XML application markup language (XAML). The REU student will use this XML-based app development framework to create a domain-specific GUI, utilizing relevant online data resources. The student will gain experience in C# programming, as well as instruction in user-driven interface development. The student will create specialized data visualization components for use within the GUI using the Notebook plugin API and the Visual Studio IDE.

Student Project #2:
Using the project’s 2 terabyte .Net platform server, the student will develop a collection of SOAP-based data access services to support a range of domain studies and Notebook GUI developments. The student will employ Microsoft’s .Net SOAP service creation paradigm, accessing data stored in an SQL Server relational database and making that data publicly available. In addition to gaining cutting edge experience in designing and deploying .Net-based services, the student will gain hands-on experience in relational
database design and programming.

**Team members:** Greg Quinn (SDSC)  
Blair Jennings (SDSC)

**Plan to Support W/M, Persons with Disabilities:** Greg Quinn has recently worked with Jacqueline F. Azize-Brewer of the UCSD CAMP Science program to identify outstanding REU minority candidates to work under his supervision on the Encyclopedia of Life project. He is very supportive of efforts to increase female representation within the bioinformatics research community.

Plan to Integrate Students:  
The work of the students will be supervised by members of the Notebook development team, principally Greg Quinn and Blair Jennings. Greg Quinn will have overall supervision of the students and will oversee the student experience throughout the project period. To fully engage the students in the project development process, they will attend and contribute to weekly Notebook development meetings held at the SDSC facility, in addition to participating in our monthly research video conferences with personnel at Microsoft Research. Students will be encouraged to present their work at internal seminars and also at external ones where appropriate.