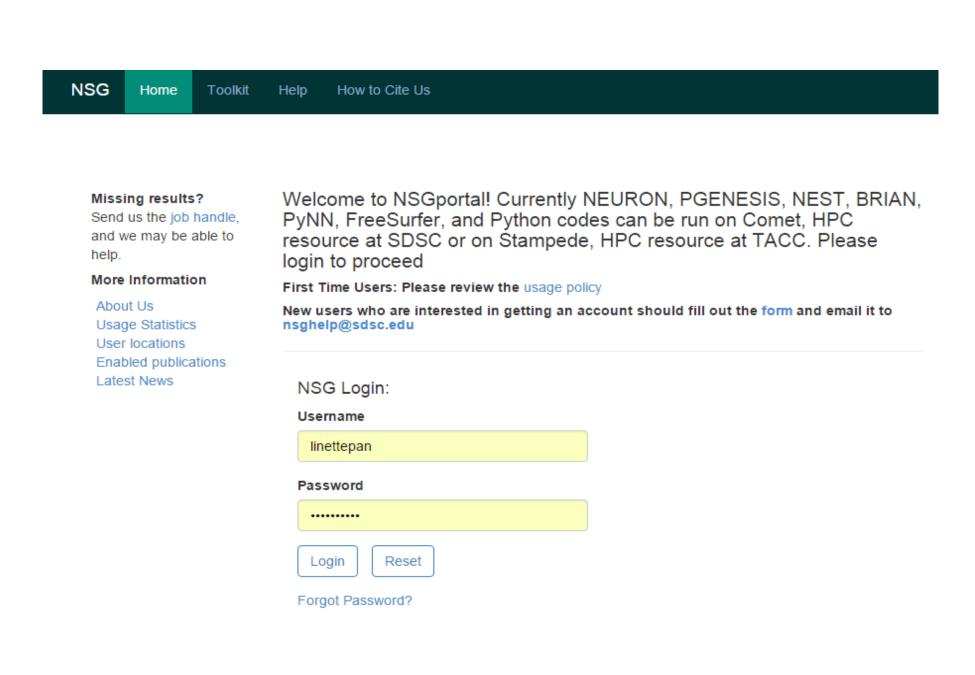# Neuroscience Gateway Development

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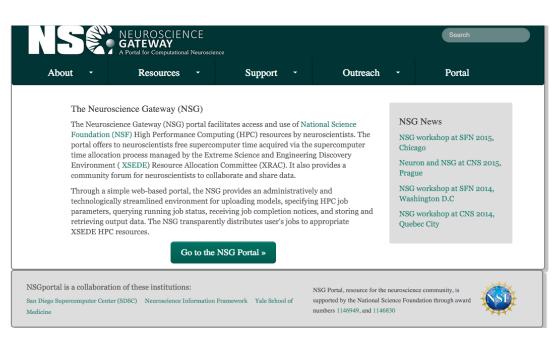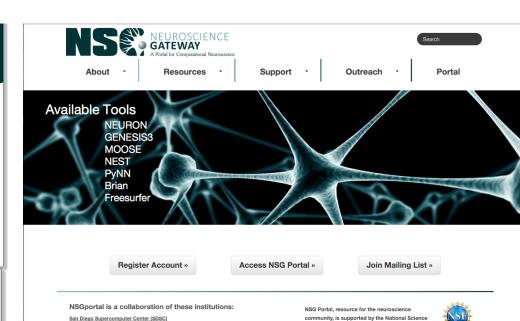**Subha Sivagnanam** (NSG Co-PI, SDSC, La Jolla, CA 92093)

Abstract

Our work this summer at the San Diego Supercomputer Center can be classified into three areas. The first part consisted of learning how to run basic programs and NEURON models on COMET. Part two consisted of creating a video for the new webpage of the Neuroscience Gateway Portal, which allows users to easily learn how to use the Portal. Finally, we sorted through models on the Model DB website to see which models could be used for a scaling study.

Introduction

The main aspect of our research involved the Neuroscience Gateway Portal. During our time, we revamped the NSG website to create a modern look. In addition, to make the site more user friendly, we created a user-guide video for new users of the portal. After figuring out these details, we went on to refine our research aspect by analyzing NEURON models and scaling them using different numbers of cores. This aspect of supercomputers makes them different from ordinary computers used in everyday life. The main goals of the project were to increase user friendliness of both the website and the portal, as well as learn more about the scaling of models to inform the neuroscience community by creating a project of scaling models which can be shown to everyone using the website.

Story

The first three weeks we spent running different models, and playing with the Neuroscience Gateway Portal. The second part of our project, the user-guide video, took about 3 weeks to complete. The final product includes a step-by-step instructional tutorial on how to create tasks and input data using the NSG portal. This was the main aspect of our project, because each step was filmed using a screen camera, and audio and slides were inserted to guide the reader both through audio and visual cues. This increases the likelihood that users can understand the video. Also, the individual nuances of the site, as well as troubleshooting are covered in depth. The final amount of time was spent scaling different models, specifically the Jones model, to see the run time cubically decreasing. These will be accessible to the public, and hopefully better the use of the Neuroscience Gateway Portal and website.

Methods

For the testing of models, we utilized SLURM, HTML5, and NEURON (a tool on COMET). These tools were vital to our ability to scale the models, add to the website, as well as run basic programs.

Summary

This research project helped teach us many aspects of how to run models, as well as what users really look for in a website and the Neuroscience Gateway Portal. It answered much needed calls for a more accessible site where all users can have a good experience using a supercomputer.