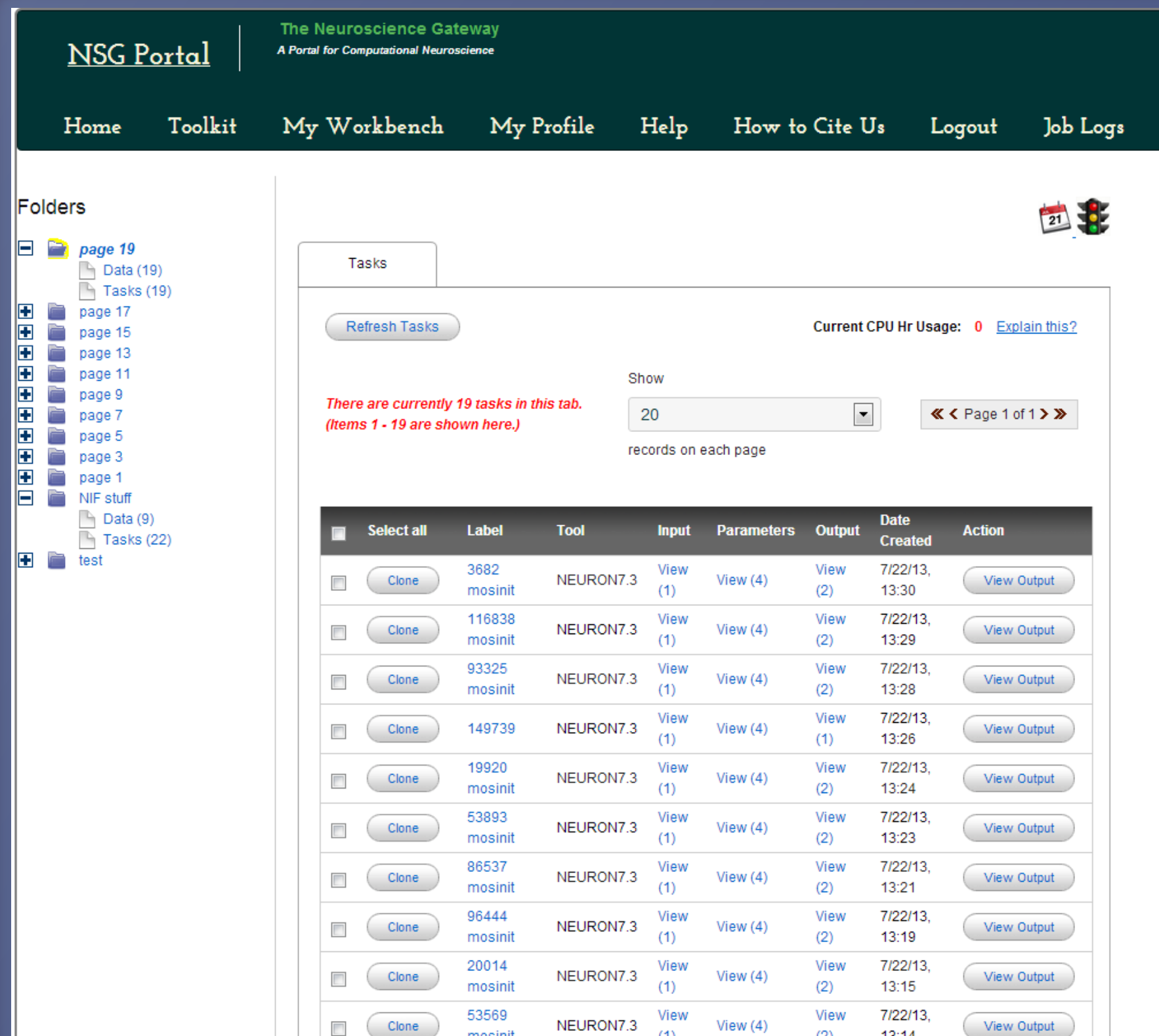


Computational Models at the Touch of a Button

Daniel Guan, San Diego Supercomputer Center, UCSD

Abstract

The Neuroscience Gateway Portal (NSG Portal) utilizes the power of UCSD's supercomputer to run whatever computational models a neuroscientist would like. It serves as the bridge between fully accessible models via ModelDB or NIF and their respective outputs as seen through completed models. Before all of this began, we became comfortable with UNIX commands and understood the processes behind running models and how the supercomputer allocates space to run many, many jobs all through the course of a day. Then, we ran models ourselves to become experts at the NSG Portal, providing our own model results as guidelines. As a whole, we can relay our own experiences, creating a user-guide for new users, and expanding the NSG Portal and NIF at the same time.

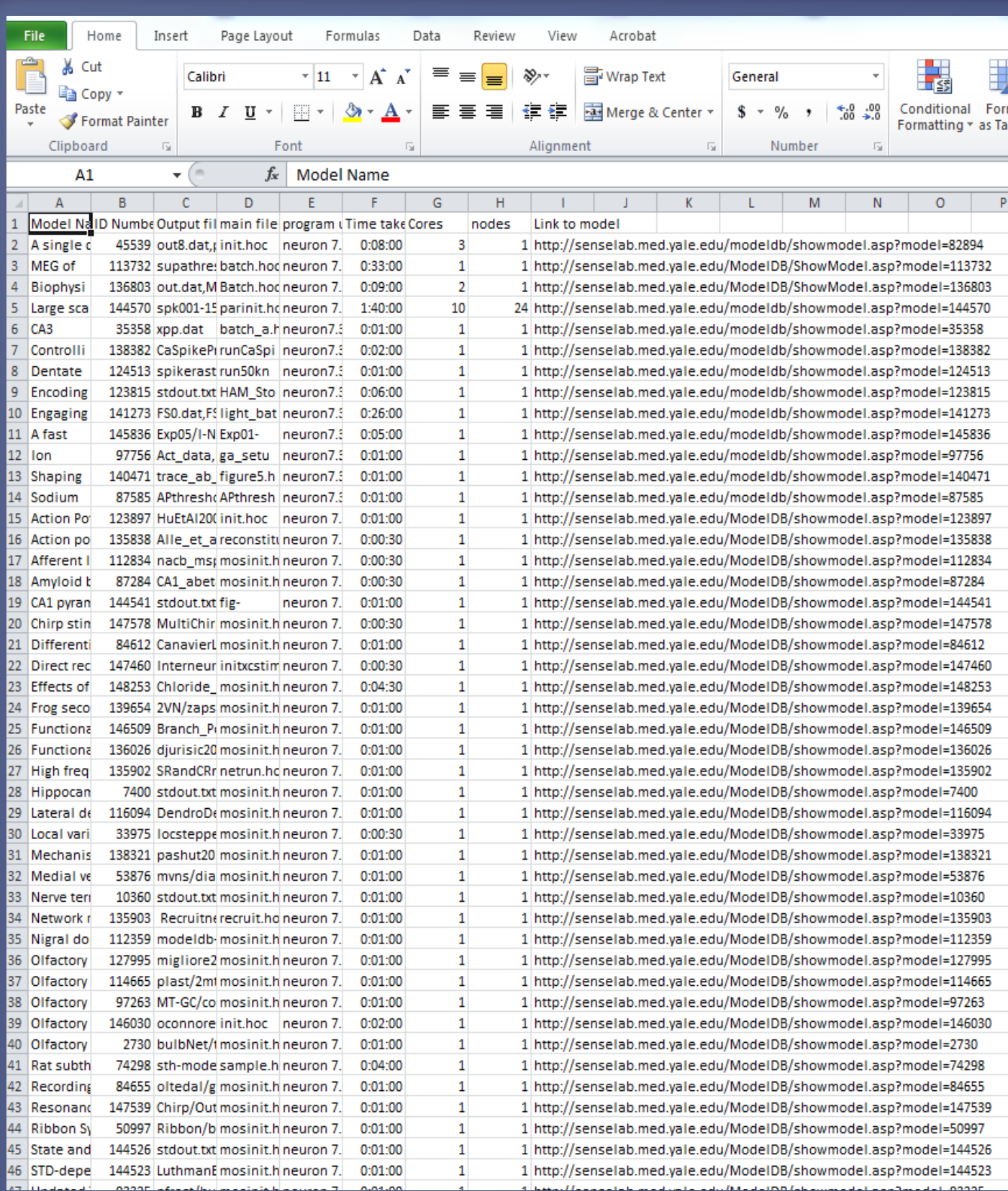


Methods

In this project, the NSG Portal, ModelDB, and NIF were used to run models. ModelDB was the source of the models, NIF maintained a database to store ModelDB and other models, and the NSG Portal allowed us to run the models by simply uploading data and setting a few parameters.

Computational Efficiency

The NSG Portal provides one of the fastest, most efficient ways for running fully-fledged computational models and retrieving graphical and meaning results. We ran approximately 400 models via the NSG Portal, a feat impossible by hand and largely tedious and complicated by other methods. With the access of ModelDB models (right), we were able to quickly download and upload files to run, produce their output, and place that output on a spreadsheet (left). As a result, we were able to upload the data that we discovered running 400 models onto NIF, and expand their site in the process (bottom), allowing scientists to crosscheck their results with ours. From there, we went back to the first stage, and created a user guide for the NSG Portal, which will facilitate faster learning with the site, and allow scientists to get started as soon as possible.



Conclusion

With the NSG Portal, great progress is being made towards easier access and distribution of model data and outputs. Supercomputers have allowed for incredibly fast computing, saving precious time for scientists, and NSG Portal provides this resource to the internet public, helping neuroscientists and scientists in general around the world. Even though running 400 models was quite tedious even through the NSG Portal, the end result was more than satisfying to see our data displayed for future use by scientists and facilitating easier navigation of the NSG Portal through our userguide. And as more models are fully run, the NSG Portal and NIF will continue to expand as more meaningful data is presented and accessible to a larger volume of the public.

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