Oral presentation

CRCNS.ORG: a repository of high-quality data sets and tools for computational neuroscience

Jeff L Teeters and Friedrich T Sommer*

Address: Redwood Center for Theoretical Neuroscience, UC Berkeley, Berkeley, California, USA

Email: Friedrich T Sommer* - fsommer@berkeley.edu

* Corresponding author

As in all areas of science, the interplay between experiment and computational theory is essential for making progress in understanding the brain. However, unlike many areas of science in which experimental data are routinely made publicly available, in neuroscience the normal procedure is that neurophysiology data is only available through direct contact with the experimentalists who produced the data. This paradigm greatly limits the accessibility of neurophysiology data, hindering effective progress in computational neuroscience. To help remedy this situation, the online repository CRCNS.ORG was created in 2008 to publicly disseminate high-quality neurophysiology data sets from various systems and species [1]. The goals of the repository are to serve the communities of Computational and Systems Neuroscience by providing experimental data for testing new algorithms for data analysis and modeling, and to also help experimentalists by sharing stimuli and software tools for designing experiments for which the results can be directly compared to previously obtained data. In addition, the CRCNS.ORG website provides forums and a "Market Place" for researchers and students to discuss and get help using data sets or other resources. We hope this approach will facilitate the creation of on-line communities of people interested in solving particular problems and that their exchange of information will also facilitate faster progress in computational neuroscience.

To illustrate how our system works, electrophysiological and behavioral (eye movement) data sets are available in the repository; the procedure by which experimentalists who wish to contribute data to the repository may do so can be easily mastered. Current data sets include single unit and multiunit recordings from the primary visual cortex of both macaque and cat, recordings from rat auditory cortex and thalamus, simultaneous recordings from two auditory brain regions in zebra finch, simultaneous recordings from rat hippocampus, and human eye movements. Envisioned enhancements to the repository include a new scheme for storing neurophysiology data that allows the data and metadata to be accessible using on-line web applications for both visualization and simple analysis. Having data available on-line in this way will greatly simplify the process of initially examining data because it alleviates the need to download a large data set and setup local client applications to use the data set. It is expected that the new storage scheme will also be useful for improving the organization of data stored within a laboratory. There remain opportunities and obstacles of publicly sharing neurophysiology data in the light of feedback that CRCNS.ORG has received from data users and contributors.

References

1. Teeters JL, Harris KD, Millman KJ, Olshausen BA, Sommer FT: **Data sharing for computational neuroscience.** *Neuroinformatics* 2008, **6**:47-55.