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Oral presentation

INCF Japan-node: visiome and simulation platforms
Shiro Usui*[1], Yoshimi Kamiyama[2] and Tadashi Yamazaki[1]

Address: [1]RIKEN Brain Science Institute, Wako, Saitama 351-0198, Japan and [2]Aichi Prefectural University, Nagakute, Aichi 480-1198, Japan

Email: Shiro Usui* - shirousui@riken.jp

* Corresponding author

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Introduction

The INCF Japan-node at RIKEN BSI coordinates activities of neuroinformatics research in Japan. Committees from selected research areas have developed their platforms (PFs) on the base platform system XooNIps http://xoonips.sourceforge.jp/. Currently eight platforms are opened accessible in public http://www.neuroinf.jp/: Visiome PF, Brain-Machine Interface PF, Invertebrate Brain PF, Neuroimaging PF, Integrative Brain Research PF, Cerebellar Development Transcriptome Database, Cerebellum PF, Dynamic Brain PF. Simulation PF is under development. It is based on a virtual machine technology that provides for testing models and/or software on each platform, including models on ModelDB at SenseLab.

Visiome platform

Increasingly, researchers have a need for published data that can be archived so that they can be accessed, uploaded, downloaded and tested. The Visiome Platform http://platform.visiome.neuroinf.jp/[1] is being developed to answer this need as a web-based database system with a variety of digital research resources in vision science. This includes contents such as mathematical models, experimental data, illusion designs, visual stimulus generation codes, demonstration movies and analytical software tools. Since reproducibility is a key principle of the scientific method, it is essential that published results be testable by other researchers using the same method. However, for example, most modeling articles do not contain enough information to reproduce and verify the results due to lack of initial conditions, incomplete parameter values and so on. The Visiome Platform has

been designed to make the items reusable. Users can browse the Platform to surf the field of vision science or seek specific topics of interest. The Platform accepts and provides archive files including any formats of model, data or visual stimulus with files of explanatory figures, program sources, "readme" and other related files. Models we have developed are now browsed and downloaded, and users can reproduce simulation results described in the original papers. The Visiome Platform contains a growing collection of the published model/tools and supports the field of neuroinformatics by making high-quality models readily available.

Simulation platform

Each platform under the J-node contains a variety of computational models as well as research papers, experimental data and analysis tools, all of which will enable the researcher to share knowledge on neuroscience and to accelerate their research. Although a number of computational models are available on other platforms and databases, preparing the environment to carry out simulations using these models is still inconvenient. If a model is written for neural simulators such as NEURON or GENESIS, we must install these simulators on our computers. If a model is written in MATLAB, one must purchase MATLAB, even for a trial run. Thus, we are launching a web computing service called Simulation Platform (SimPF) [2]. Users can run a trial of models that are registered on neuroinformatics databases such as ModelDB and platforms under J-node. All procedures use a web browser and do not install any software on local computers. A user is asked to upload a script of a model to SimPFand, then

SimPF assigns a virtual machine (VM) for the user from SimPF clouds and connects the VM automatically to the user's browser via the VNC (Virtual Network Computing) protocol. In summary, SimPF lets the users be free from preparing the environment to carry out simulations and thereby supporting and speeding up their research. We hope it can be also used to validate models for journal reviews.

References

1. Kamiyama Y, Usui S: **Visiome Platform in Modeling Retina.** *INCF Congress of Neuroinformatics Pilsen, Czech Republic* 2009.
2. Usui S, Yamazaki T, Ikeno H, Okumura Y, Satoh S, Kamiyama Y, Hirata Y, Inagaki K, Kannon T, Kamiji NL: **Simulation Platform: a test environment of computational models via web.** *INCF Congress of Neuroinformatics Pilsen, Czech Republic* 2009.