Helmholtz Portfolio Theme "Supercomputing and Modelling for the Human Brain" – General Assembly 2015

A total of 92 scientists from Forschungszentrum Jülich and several partner institutions collaborating within the Helmholtz Portfolio Theme "Supercomputing and Modelling for the Human Brain" (SMHB) [1] met for their annual General Assembly on March 30th and 31st at the Jülich Supercomputing Centre (JSC), to present and discuss the work progress achieved in 2014 and to agree on the next steps in the project.

The SMHB started in January 2013 as a Portfolio Theme [2] of the Helmholtz Association. Its overarching goal is to better understand the organization and functioning of the human brain by developing a realistic model of the brain. To meet this grand scientific challenge, an appropriate infrastructure for High Performance Computing (HPC) in the exascale range and Big Data analytics needs to be built.

The work plan of the SMHB therefore integrates a wide range of knowledge and expertise from fundamental neuroscience, brain modelling and simulation, simulation software technology, High Performance Computing, large-scale data management, scientific workflows, and interactive visualization and analysis. The SMHB collaborates with the JSC's Exascale Labs for the co-design of neuroscience applications and HPC technology.

The SMHB is embedded into the allied partnership of the two new Helmholtz Programmes "Decoding the Human Brain" and "Supercomputing and Big Data". Both were successfully reviewed in 2014 and started in January 2015 with the third period of the Programme-oriented Funding of the Helmholtz Association. The SMHB was also conceived as part of the Helmholtz contribution to the European Future and Emerging Technology (FET) Flagship "Human Brain Project" [3].

The SMHB General Assembly 2015 was opened by Prof. Wolfgang Marquardt, Chairman of the Board of Directors of Forschungzentrum Jülich, and by the two project speakers, Prof. Katrin Amunts (INM-1) and Prof. Thomas Lippert (JSC). In the course of this meeting, the vivid collaboration in the SMHB became once more evident through many examples of fruitful interactions between the SMHB work packages and tasks. The work plan was also updated in order to adapt the work to upcoming needs and to further strengthen existing or newly established links. For instance, two new tasks "3D cellular architecture" and "multimodal modelling of structure, function and connectivity" were added to the work plan.

Dr. Moritz Helmstaedter from the Max Planck Institute for Brain Research gave an invited and very well received keynote talk on his research topic of Connectomics, in which he introduced the audience to the dense reconstruction of neuronal circuits.

A further highlight of this year´s meeting was the SMHB young scientists presenting their work in a spotlight talk session and discussing it afterwards with colleagues and members of the SMHB Scientific Advisory Board with expertise in several fields during the poster session.

References

[1] http://www.fz-juelich.de/JuBrain/EN

[2] http://www.helmholtz.de/en/research

[3] https://www.humanbrainproject.eu

contact: Anne Do Lam-Ruschewski, a.dolam@fz-juelich.de

- Anne Do Lam-Ruschewski
- Anna Lührs
- Boris Orth

Jülich Supercomputing Centre (JSC), Germany