Transforming Education, Collaboration, and Research in Neuroscience

The GENESIS Project - approaching its third decade.

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The General Neural Simulation System (GENESIS) was first released for general use in 1988 as part of the first Methods in Computational Neuroscience Summer Course at the Marine Biological Laboratory in Woods Hole, Mass. Since its release 17 years ago, the GENESIS project has grown to provide the basis for educational and research efforts in neuroscience around the world.   Support for the educational use of GENESIS has been a central objective of this effort from the outset, playing an important role in the considerable growth in the field of computational neuroscience.

Through its 17 years of existence, GENESIS has provided support for the ongoing course in Woods Hole, the annual Methods in Computational Neuroscience Course offered by the European Union, courses in Mexico, and India, and in January of 2006 will support a new course in computational neuroscience for Latin America to be held in Ribeirão Preto, Brazil (http://neuron.ffclrp.usp.br/lascon/home.htm). In addition to these specialized courses, GENESIS, at last count, has also been used as the basis for course work in more than 50 colleges and universities around the world at both undergraduate and graduate levels. The Book of GENESIS, originally published in 1994, (second edition 1998) which includes a wide range of educational tutorials, is now available for free to all over the web: http://www.genesis-sim.org/GENESIS/iBoG/index.html

In October of 2004, the National Institute for Neurological Disorders and Stroke (NINDS) of the U.S. National Institutes of Health provided major grant support for the further enhancement and extension of the GENESIS project, with a particular focus on its value as a tool for education and professional collaboration. This grant provides support for a major transformation of the GENESIS interface into Java, as well as a major GENESIS redevelopment effort leading to release of version 3 of the modeling platform (for more information on redevelopment specifications: http://www.genesis-sim.org/GENESIS/newgrant/index.html). Funding was also provided to enhance and extend existing

GENESIS tutorials, and provide student travel support for a major new annual meeting focused on tools, techniques and results from realistic modeling (http://www.wam-bamm.org). Importantly, thisgrant also provides support for a significant new effort to bring advanced Internet technology for education and scientific collaboration to the GENESIS community. Using the virtual world collaborative platform developed by Numedeon Inc. (www.numedeon.com), the GENESIS development team is working to implement a virtual 3-D home for the GENESIS project, which will support virtual workshops, distance learning, and formal and informal collaborations built around realistic simulations. We believe that the GENESIS-Virtual project will help to further transform the model-based study of neuroscience as well as neuroscience education.