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LSU Researchers Receive \$4M NSF Grant Funding for SuperMIC Supercomputer

By Paige Brown

BATON ROUGE – Researchers at the LSU Center for Computation & Technology (CCT) have received a Major Research Instrumentation (MRI) award from the National Science Foundation, or NSF, of nearly \$4 million for the acquisition of SuperMIC, a new supercomputer cluster. The SuperMIC award is the largest NSF MRI award LSU has ever received. The instrumentation, which will be harnessed for a variety of research projects involving discovery of new drugs, modeling coastal processes and forecasting hurricane-generated waves and storm surges, will allow Louisiana to take the next step in supercomputing. The new SuperMIC computing cluster will also allow LSU to prepare students and faculty for the next generation of high-performance supercomputers.

"We are thinking that even the number one supercomputer today could be the new smartphone in 20 years," said Honggao Liu, Deputy Director of CCT and Principal Investigator of the project. "Right now, developing software for these machines is really a burden for the developer, so people really need to learn how to do that. So that is the goal with SuperMIC, to train the next generation of researchers to use this type of new architecture, and to help students today learn the skills to program the smartphones and laptops of the future."

The new supercomputing cluster, the first of its kind in Louisiana, will be housed in the LSU Frey Computing Services Center machine room. However, hundreds of scientists throughout the state of Louisiana will be able to use the instrumentation for research projects that require processing of large amounts of data. SuperMIC is also intended to have an impact at the national level, with 40 percent of its computational resources reserved for participants in the Extreme Science and Engineering Discovery Environment (XSEDE), a virtual system that scientists can use to interactively share computing resources, data, and expertise.

"In the past, LSU was connected to the national cyberinfrastructure via the TeraGrid program, now the SuperMIC project will re-connect the University to the national infrastructure via the XSEDE program," Liu said. "This is a unique opportunity for LSU to again become a significant player on the national scene, and this award will be an exemplar for how the national community and the University infrastructures can interact for the benefit of both."

The total computing capacity, or processing speed, of SuperMIC will be over 1 Petaflops, equivalent to the ability of a computer to do one quadrillion calculations per second. For comparison, the US's fastest supercomputer (the world's No. 2 system) today, Titan at the Oak Ridge National Laboratory, is capable of 27 Petaflops.

In addition to being used for research purposes, SuperMIC will support education projects throughout the state, including CCT and LA-SIGMA research experiences for undergraduates (REU) programs, bootcamps to introduce high-school students to the field of supercomputing and distance-learning classes.

NSF's award to LSU's CCT for SuperMIC will be effective October 1, 2013, and expires September 30, 2016.

The NSF MRI program supports the acquisition of major state-of-the-art instrumentation, improving access to, and increased use of, modern research and research training instrumentation by a diverse workforce of scientists, engineers, and graduate and undergraduate students.

For more information about the NSF MRI program, visit <http://www.nsf.gov/od/jia/programs/mri/>.

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