Jersey Shore

Professor Monir Sharobeam, Associate Professor Russell Manson, and Graduate Students Demetrios Roubos and Susan Allen discussing a scientific visualization at Stockton College.
High performance computing reaches across the state of New Jersey and empowers the workforce of tomorrow.

In the computational science and engineering version of "Jersey Shore", the "Situation" is the formation of a new statewide consortium of institutions, faculty, administrators, and students working together to prepare the workforce to contribute to advancements in computational and data enabled science and engineering (CDSE).

The leaders of this new statewide effort say that many of the roots of this initiative began with the Supercomputing Conference (SC) Education Program and the leadership of the education, outreach and training (EOT) efforts of TeraGrid, NCSA’s Blue Waters project, and the National Computational Science Institute (NCSI).

Dave Joiner, faculty member at Kean University, cannot contain his enthusiasm when talking about what is happening at Kean University and across the state of New Jersey to prepare many more students with computational science and engineering skills. Joiner has had a long history of preparing faculty to integrate computational science into their classrooms through NCSI and the SC Education Program. Joiner helped Kean University launch the New Jersey Center for Science, Technology and Mathematics five years ago.

During the SC07 Education Program, Joiner was challenged to extend the impact of CDSE from his own campus to other campuses within the state. Joiner has reached out to faculty in New Jersey by hosting a summer workshop each year since with support from the SC Education Program, TeraGrid, Blue Waters and NCSI. Russell Manson, Director of the Graduate Program in Computational Science at Stockton College, and his colleagues heard Joiner’s rallying call and attended summer workshops at Kean and subsequently attended their first SC09 Education Program to learn more about CDSE and what it could mean for their faculty and students.

Kean University and Stockton College have teamed up to secure additional grants to extend their computer science and engineering programs. Stockton College received a Department of Education FIPSE award to install a GPU cluster. Manson says, “It was because of the excitement and motivation we gained from the SC09 Education and NCSI leaders, that we decided to collaborate to secure an MRI-R2 award from the National Science Foundation to provide Stockton with a GeoDome and Kean University with a CAVE, both of which will help us conduct scientific visualization education for our students and faculty.”

Joiner adds, “With support from the SC Education Program, TeraGrid, NCSI and Blue Waters, we have been able to engage faculty from New Jersey institutions each of the last three years. We have become the leaders in the state assisting faculty in learning about and integrating CDSE into their classrooms. There is a statewide sense of permanence and authentic value that faculty around the state can count on to assist them.”

The summer workshops are for faculty from all science and engineering fields with a focus on high performance computing. The faculty are not expected to become programmers, but rather users of applications and community codes to educate their students. Participants are provided with access to the supercomputing and visualization infrastructure that Kean and Stockton have secured through multiple grants.

Joiner, Manson and their colleagues are now working with the NJEDge project, that provides New Jersey schools with high-speed networking and bandwidth, to form the New Jersey Institute for Modeling and Visualization as a statewide consortium. The consortium’s goal is to spread high performance computing across the state and support sharing of resources, materials, and curriculum to enhance CDSE education statewide.

Manson says, “the ability to send our students to the SC Conference has been a phenomenal experience for them. Our first Masters student was exhilarated by his experience at the SC Conference.” Joiner adds, “I had a student who was on the fence and he decided to pursue computational science after his experience at SC07. During the SC Education Program, our faculty and students were able to present their research along with others across the country. We will continue to send as faculty and students to the SC Conference.”

A goal of the New Jersey Center for Science, Technology and Mathematics program is to increase the number of science and math teachers. Manson says, “We are hearing from New Jersey school districts that they are particularly pleased to be able to hire teachers that are graduating with a strong background in math, computing and science. We are also very pleased to say that a majority of the students in our computational science degree program are women.”

Joiner and Manson believe there is a strong sense of community building within the state. “As a result of our efforts to bring together people from across the state, these people are joining mailing lists, working together, and sharing information with one another. We are grateful to the support and encouragement of national CDSE leaders for helping us to realize the potential for enhancing the education of our students.”

Although they may not be TV stars, the ‘Jersey Shore’ students will be well prepared to be the future stars and leaders for advancing scientific discovery.

Relevant links:
Kean University: http://www.kean.edu
New Jersey Center for Science, Technology and Mathematics: http://njcste.kean.edu/Welcome.html
Stockton College: http://stockton.edu
New Jersey Edge: http://www.njedge.net/
SC Conference: http://sc10.supercomputing.org
TeraGrid: http://www.teragrid.org
Blue Waters: http://www.ncsa.illinois.edu/BlueWaters
NCSI: http://www.computationalscience.org/