

UMass Amherst Receives \$4.2 Million to Train Next National Cybersecurity Workforce

A team of UMass Amherst cybersecurity researchers led by CICS Professor Brian Levine has received a \$4.2 million grant from the National Science Foundation (NSF) to bring a CyberCorps Scholarship for Service (SFS) program to the campus, making UMass Amherst the first public university in New England to receive such an award. NSF's CyberCorps program, in partnership with the Department of Homeland Security, supports the educational and professional development of domestic students who will help the nation address threats to national security including critical infrastructure such as utilities, water treatment, military defense systems, and refineries.

The program, which will support a total of 28 students over the next five years, will admit its first students in the fall 2016 semester, according to Levine. U.S. citizen or permanent resident students can receive up to two years of support from the CyberCorps SFS. For each year they accept aid, they will serve for one year in a federal, state, or local government position related to cybersecurity.

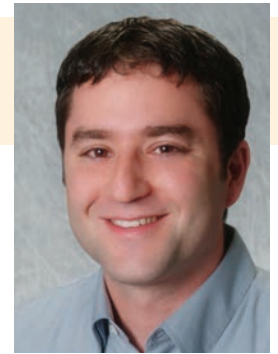
"The program offers very generous support," Levine noted, "and we will be actively recruiting women and people from underrepresented minority groups interested in security." Graduate students receive full tuition and fees per year, plus an annual stipend of \$34,000 and \$9,000 in additional benefits; undergraduates receive the same except the stipend is \$22,500 per year. In addition to financial benefits, Levine said students in the CyberCorps SFS program will receive support in extra mentoring groups, assistance in finding

summer internships and permanent positions at federal and state agencies, and other professional development opportunities.

Upon graduation and completing the training, students will join government agencies at full pay and benefits working in cybersecurity, such as the FBI, National Institutes of Health, Centers for Disease Control, and analogous agencies at a state or local level. Any government service involving cybersecurity fulfills the service requirement, ranging from protecting the nation's infrastructure from state-based hackers to joining a state university as a researcher or educator in cybersecurity.

Katherine S. Newman, senior vice chancellor and provost, said, "This program answers a critical national shortage of highly trained experts in cybersecurity and will prepare students for successful careers in this field through a combination of strong curricula, ample professional development, extensive advising, interdisciplinary enrichment, and access to recruiting opportunities."

In addition to Levine, Wayne Burleson, engineering, Marc Liberatore, CICS, Mila Sherman, management, and Eric Sommers, mathematics, are also co-PIs of the program. Faculty members contributing to the grant include Emery Berger, Yuriy Brun, Lori Clarke, Krista Gile, Arjun Guha, Dan Holcomb, Amir Houmansadr, Gerome Miklau, Anna Nagurney, and Ryan Wright.



Brian Levine

Net Zero Data Center Testing Sustainability

Some computer data centers see electricity bills in the millions of dollars each month, and costs continue to rise, said CICS Professor Prashant Shenoy, which is why the official opening in February of New England's first experimental solar-powered data center located at the Massachusetts Green High Performance Computing Center (MGHPCC) in Holyoke was recently hailed as a promising first step in leading the nation toward net-zero, green data and computing centers.

The 200-square-foot Mass Net Zero Data Center (MassNZ) is a shed-sized micro data center on the MGHPCC grounds. Using MassNZ for testing, Shenoy will lead a team of investigators in researching how to power data centers sustainably with renewable energy.

Solar panels next to the facility provide power to run about three racks of a total of 40 servers, with cooling systems, batteries, and micro-flywheels for energy storage, Shenoy noted. MassNZ will also house a variety of different server, storage, sensor, and network systems.

His colleague, David Irwin, electrical and computer engineering professor, said, "We are the first in New England and one of the first in the nation to be doing this research, and ours is certainly the only one of these facilities that is

next-door to a real data center, so we can benefit from comparing our experimental scenarios with what it is doing in real time. The combination is unique."

Among scenarios the researchers plan to simulate are cooling with air conditioning vs. outside air, converting from solar DC to grid AC power, and using power from several different storage battery types. They are collaborating with HG&E to deploy these. One of the first tasks for the team will be to create software for managing experiments remotely from campus. Once fully operational, MassNZ will be available to UMass and other MGHPCC university researchers for conducting experiments. It is supported in part by grants from the National Science Foundation, the American Public Power Association, and the Massachusetts Clean Energy Center.



Prashant Shenoy