COMPUTERWORLD
Careers

IT School to Watch: Virginia Tech

Broadening its course offerings broadens students' perspectives.

Mary Brandel

August 18, 2008 (Computerworld) What Deept Kumar values about his consolidated Ph.D. from Virginia Polytechnic Institute and State University isn't just the depth of knowledge he gained in bioinformatics and data mining, but also the breadth of study to which he was exposed. "There's a one-dimensionality in a lot of people who specialize in a field, but when you try to talk with them about something different, they're out of their depth," he says.

Conversely, thanks to Virginia Tech's focus on interdisciplinary education, Kumar feels he can address a range of topics, including virtualization, information retrieval, usability and more. In fact, a key part of his research involved convincing the biologists he worked with that the algorithms he had developed were useful for discovering data patterns. That took patience, he says, and an understanding of how to break things down into simple terms. It also helped him to develop respect for people who don't understand computer science. "They know things you don't know, and you need to be respectful of what they want to do," he says.

According to Dennis Kafura, former head of the Department of Computer Science at Virginia Tech and now a professor of computer science there, the program's strongest suit is its interdisciplinary collaboration, which spans everything from life sciences -- it has programs in computational biology and bioinformatics -- to human-computer interaction, creative arts and design, engineering, humanities, social science, business, education and government.

"We want to serve as role models for integrating computer science across multiple disciplines in innovative ways," Kafura says. (The new department head is Barbara Ryder, formerly of Rutgers University.)

In fact, students are free to choose from electives offered outside of computer science. For Jamika Burge, who completed a Ph.D. in computer science with a focus on human-computer interaction at Virginia Tech this year, that meant taking courses not just in software engineering and databases, but also in organizational psychology, high-level statistics and even French. "I found it helpful to branch out into these other areas," she says.

At a Glance

Location: Blacksburg, Va.
www.cs.vt.edu
Department: Computer Science
Program: M.S. in computer science

Key administrator: Barbara Ryder, department head
In-state tuition: $9,000
Out-of-state tuition: $16,500

Overall grade: A-
Value: A-
Positive career impact: A
Relevance to actual career activities: B+

SOURCE: Computerworld/Dice.com survey of 49 Virginia Tech graduate-level alumni

Burge's adviser was a trained psychologist, and many of the professors in the Center for Human-Computer Interaction hail from disciplines outside of computer science, such as industrial engineering, music, education and art. "Those perspectives are brought to bear on how people interact with the world and with technology," Burge says. She is now pursuing postdoctoral work at Pennsylvania State University, where she's studying how people interact across wireless networks.

Virginia Tech also works to keep its curriculum innovative and geared toward solving the problems that graduates will encounter in the real world. Professors regularly exchange ideas with IT industry professionals through faculty summits and other networking opportunities, according to Kafura. This is reflected in the curriculum and through special one-off courses, available to more advanced students, that are focused on cutting-edge issues. After two years, these courses are integrated into the regular curriculum if students show sustained interest in them, he says.

The department has also created a course in which students use the IBM Cell processors found in Sony PlayStation 2 machines for scientific computing applications, in order to learn about high-performance computing. This is a prime example of new developments in computing translating into coursework, says Naren Ramakrishnan, director of graduate studies at Virginia Tech.

To gain experience, many students participate in summer internships, and it's common practice for students to present their papers at conferences. "This gives students in research mode a very strong motivation to learn and develop their presentation skills," says Kafura.

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