Students saying no to computer science

By Ed Frauenheim, CNET News.com
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At the Massachusetts Institute of Technology, as in other schools across the country, computer science enrollments are dropping, raising questions about the country's future tech leadership.

This fall, there are just under 200 new undergraduate majors in MIT's electrical engineering and computer science department, down from about 240 last year and roughly 385 three years ago.

The Rutgers University computer science department has canceled some course sections and expects total enrollment in classes in the major this year to be thousands less than its peak of 6,500 several years ago. Saul Levy, chair of the undergraduate computer science program, said the ongoing decline stems from the way students perceive career prospects.

"They don't believe in the job market in computers anymore," Levy said.

At Carnegie Mellon University, 2,000 students applied to the school of computer science this year, down from 3,200 in 2001. At the University of California at Berkeley, the number of computer science majors pursuing a bachelor of arts degree was 226 this spring, down from 240 in the spring of 2003. Across the bay at Stanford University, the number of computer science undergraduate majors has declined for the past four years, from 171 in the 2000-2001 year to 118 this past year.
What Levy and others on the academic frontlines are observing raises concerns about America's tech work force and its leadership in the field. Peter Lee, associate dean at Carnegie Mellon's school of computer science, worries that fewer undergraduate computer science majors will translate into fewer computer science doctorates. That, in turn, risks slowing momentum in the field and losing the nation's lead in computer science research to countries such as India or China, he said.

In addition, Lee said, a smaller pool of researchers could mean the discipline generates less attention and, therefore, fewer new students. "It's a difficult thing to overcome," he said. "There's a vicious cycle."

The number of doctorates in science and engineering produced in the United States has dropped in recent years, and the figure could decline further thanks to fewer foreign doctoral degree candidates. Observers also have argued that research in the country is not as bold as it could be.

The National Science Board, an independent body that advises Congress and oversees the National Science Foundation, recently warned of a "troubling decline" in the number of U.S. citizens studying to become scientists and engineers, even as the number of jobs requiring science and engineering training grows.

But not everyone is sure the country needs more Ph.D.s, and some observers argue there are many technology professionals unable to find work in the wake of the dot-com demise and the rise of offshoring.

A recent study from the Rand think tank concluded that a labor shortage isn't looming in tech-related fields in the United States. "Despite recurring concerns about potential shortages of (scientific, technical, engineering and mathematics) personnel in the U.S. work force, particularly in engineering and information technology, we did not find evidence that such shortages have existed at least since 1990, nor that they are on the horizon," the report said.

Nationwide numbers for undergraduate enrollments in computer science departments this fall were not available. But a survey of Ph.D.-granting computer science departments in the United States by the Computer Research Association found that the number of new undergraduate majors in the field dropped 18 percent last year.

Carnegie Mellon's Lee said the recent decline in undergraduate enrollment is part of a larger trend of declining student interest in computer science over the past two decades--a tendency temporarily interrupted by the dot-com boom of the late 1990s. To him, a fundamental cause is that computer science hasn't emphasized its grand challenges.

Rather than tout the excitement of trying to magnify human intelligence through machines, the field has focused on more practical matters, which tend to be less attractive than big questions in disciplines like biology or chemistry, he said.

"It's hard for voice over Internet Protocol or e-commerce to compete with finding the age of the universe," he said.

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