Hollywood Spurs Surge in Computer Science Majors

NEW HAVEN — When Keila Fong arrived at Yale, she had never given much thought to computer science. But then last year everyone on campus started talking about the film "The Social Network," and she began to imagine herself building something and starting a business that maybe, just maybe, could become the next Facebook.

"It's become very glamorous to become the next Mark Zuckerberg, and everyone likes to think they have some great idea," said Ms. Fong, a junior, who has since decided to major in Yale's newly energized computer science program.

Never mind that Mr. Zuckerberg, like other tech titans, did not major in computer science — or even finish college. Enrollment in computer science programs, and degrees from them, are rising after a decade of decreases, despite much handwringing about the decline of American competitiveness in technology and innovation from President Obama on down. And educators and technologists say the inspiration is partly Hollywood's portrayal of the tech world, as well as celebrity entrepreneurs like Steven P. Jobs of Apple and Mr. Zuckerberg who make products that students use every day.

"It's a national call, a Sputnik moment," said Mehran Sahami, associate chairman for computer science education at Stanford, referring to the Soviet satellite launching in 1957 that pushed the United States into the space race. "Students are users of Facebook or Google, and they think about how the people who created it are not that much different than themselves. The realization that I can do this too is a powerful motivator."

The number of computer science degrees awarded in the United States began rising in 2010, and will reach 11,000 this year, after plummeting each year since the end of the dot-com bubble in 2004, according to the Computing Research Association, which tracks enrollment and degrees. Enrollment in the major peaked around 2000, with the most degrees — 21,000 — awarded four years later. The number of students who are pursuing the degree but have not yet declared their major increased by 50 percent last year.

To capitalize on the growing cachet of the tech industry, colleges nationwide, including Stanford, the University of Washington and the University of Southern California, have recently revamped their computer science curriculums to attract iPhone and Facebook-obsessed students, and to banish the perception of the computer scientist as a geek typing code in a basement.

Even universities not known for computer science or engineering, like Yale, are seizing the moment. The deans of the Ivy League engineering schools recently started meeting to hatch ways to market "the Ivy engineer."

The new curriculums emphasize the breadth of careers that use computer science, as diverse as finance and linguistics, and the practical results of engineering, like iPhone apps, Pixar films and robots, a world away from the more theory-oriented curriculums of the past.

"The old-fashioned way of computer science is, 'We're going to teach you a bunch of stuff that is fundamental and will be long-lasting but we won't tell you how it's applied,' " said Michael Zyda, director of the University of Southern California's GamePipe Laboratory, a new games program in the computer science major. With the rejuvenated classes, freshman enrollment in computer science at the university grew

to 120 last year, from 25 in 2006.

Still, computer science graduates do not come close to filling the jobs available. Technology is one of the few bright spots in the economy, with jobs growing at double the rate of job growth over all, according to federal statistics. And colleges say they do not have enough resources or professors to teach interested students. Meanwhile, the programs woefully lag in attracting women and many minorities, though the share of computer science degrees granted to women climbed 2.5 percentage points last year to 14 percent.

Vint Cerf, Google's chief Internet evangelist, said that while mobile devices had fueled interest in building software, the excitement was nowhere near what he and his colleagues felt in the 1960s. "It's still a problem," Mr. Cerf said.

But the numbers tell a hopeful story.

At Stanford, which has never lacked computer science students, majors nearly doubled after a new curriculum in 2008 let students choose a focus, like artificial intelligence. At the University of Washington, enrollment in the introductory computer science course is at a record high of 1,700. At Harvard, the size of the introductory computer science class has nearly quadrupled in five years. This year's course ended with an all-night "hackathon" with pizza, Chinese food and breakfast at IHOP.

To hook students, Yale computer science professors are offering freshman seminars with no prerequisites, like one on computer graphics, in which students learn the technical underpinnings of a Pixar movie.

"Historically this department has been very theory-oriented, but in the last few years, we're broadening the curriculum," said Julie Dorsey, a professor.

She also started a new major, computing and the arts, which combines computer science with art, theater or music to teach students how to scan and restore paintings or design theater sets.

Professors stress that concentrating on the practical applications of computer science does not mean teaching vocational skills like programming languages, which change rapidly. Instead, it means guiding students to tackle real-world problems and learn skills and theorems along the way.

"Once people are kind of subversively exposed to it, it's not someone telling you, 'You should program because you can be an engineer and do this in the future,' " said Ms. Fong, the Yale student. "It's, 'Solve this problem, build this thing and make this robot go from Point A to Point B,' and you gain the skill set associated with it."

With other students, she has already founded a Web start-up, the Closer Grocer, which delivers groceries to dorms.

Some question whether the surge in interest is a passing fad fueled by frenzy over iPhone apps and LinkedIn's soaring initial public offering, just as enrollment in computer science spiked during the dot-com bubble of the late 1990s.

But educators say this time is different.

"What we're seeing now is a better-motivated upsurge," said Ed Lazowska, a professor of computer science and engineering at the University of Washington, "students who understand that they really need to know this material."

And the movie can't hurt, he said, because at least it has transformed the image of a programmer. Computer

scientists are finally getting the treatment that doctors got with "Grey's Anatomy" and reporters with "All the President's Men."

"We've been saying for 15 years, 'If we could just get a show like the lawyer and doctor shows that make being a software person sexy,' " Mr. Lazowska said.

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