

Magazine

# Want a tech job? Study this. Advice from Mozilla, Reddit, Tumblr and more



By **Lisa Grace Lednicer** August 8  [Follow @lgledit](#)

Aaron Saunders of Washington startup Clearly Innovative: Universities “need to rethink education.” (Andre Chung/For The Washington Post)

Aaron Saunders, chief executive of Clearly Innovative, took a traditional route to a tech career: He earned a computer science degree at Ohio Wesleyan, studied marketing and information technology en route to an MBA from NYU, then hopped through jobs as an application architect for Lotus Development, a designer of Web strategy for Time Warner Cable, and a manager for the redesign

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of an e-commerce site.

Now, at 50, Saunders is mentoring students who will be hired into jobs that didn't exist when he entered college 32 years

ago: app coding. Social media management. User experience/user interface chief. Video game design. Data visualization specialist.

Saunders himself is part of this new arena: He runs a Washington startup he launched three years ago to advise companies on Web and mobile apps and modules. He has 15 employees, two overseas contractors and a New York-based apprentice. Most don't have computer science degrees. When he considers what colleges are teaching the people he hopes to hire someday, he isn't optimistic.

“Universities are slow to change,” he says. “They need to rethink education. What you're teaching is just as important as how you're teaching it.”

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As tech jobs evolve at the pace of light through fiber-optic cable, Saunders and other leaders of tech firms such as Mozilla, Reddit and Tumblr say students should consider schools that not only will teach them traditional skills like coding, but also the softer skills that aren't listed in the course guide but are essential to the 21st-century workplace: working with others,

problem-solving, the ability to pick up enough from disciplines other than their own to create products users believe are indispensable to their lives.

That means high schoolers need to ask colleges different questions from the ones their parents might have asked. (After all, how many colleges have schools of problem-solving?) At the same time, colleges themselves are trying to figure out what they should be teaching.

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Mark Surman of Mozilla: “You really need to be a well-rounded, Renaissance, Internet-era kind of person.” (Cole Burston/For The Washington Post)

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“Coding, editing video, design — it really is just the tip of the iceberg,” says Mark Surman, executive director of the Mozilla Foundation, based in Mountain View, Calif. Mozilla produces the Web browser Firefox. “What’s below the tip of the iceberg is participation, critical thinking and being able to collaborate. You really need to be a well-rounded, Renaissance, Internet-era kind of person.”

Although it’s still possible to get a job without a college degree, as companies mature they tend to look for employees who have experience collaborating with peers on projects and have picked up skills beyond, say, programming. Coding can be learned online, but students’ ability to connect with

people and with alumni who can steer them to internships, jobs and mentors can't easily be replicated outside a college setting.

Employers say the choice of a major isn't critical. It's the discipline to spend years on an area of study — and producing work that demonstrates the result of that effort — that persuades employers to take a chance on hiring someone in their 20s.

“We don't really care what school you go to,” says Ellen Pao, senior vice president of strategic partnerships at Reddit, the San Francisco social news aggregation Web site that ranks content based on a user-influenced scoring system. “We're interested in people who really love what they do.”

Employment statistics reflect the promise of job security for young people who want to pursue technology careers. The Bureau of Labor Statistics projects a 22.8 percent increase in employment for software developers through 2022, more than double the 10.8 percent increase in overall employment. The median wage isn't too shabby, either: \$101,410, according to the Labor Department. As more commerce — from making restaurant reservations to routing steel shipments — moves online and people increasingly search online via smartphones, tablets and other mobile devices instead of PCs, businesses will need more people to

create and customize software, the Labor Department says.

U.S. News and World Report ranks “software developer” as the best tech job in 2014, up from seventh last year. Third, and ranked ninth overall on U.S. News’ list of the 100 best jobs, is “Web developer” (median salary: \$62,500).

Meanwhile, the growth in tech-related college majors is surging. According to the Computing Research Association, enrollment in computing majors rose 13.4 percent in 2012-2013, the sixth straight year of increasing undergraduate enrollment. In its list last year of “11 Hot College Majors That Lead to Jobs,” U.S. News included cybersecurity, data science and computer game design. The Princeton Review began ranking video-game design programs for undergraduates and graduates in 2009, starting with eight programs; its most recent survey ranked 50 programs.

“Students are really pushing for these types of majors, and schools are responding in kind,” says David Soto, director of content development at the Princeton Review.

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Mayank Jain, a Northern Virginia high school graduate studying at the University of Illinois and interning at a San Francisco startup: “It’s becoming less and less important to teach specific things and more important to teach how to think critically and solve

Mayank Jain, a 2012 graduate of Thomas Jefferson High School for Science and Technology in Alexandria, will be a junior this fall at the University of Illinois at Urbana-Champaign and is working this summer at a startup in San Francisco, helping to develop an iPhone app. He said he wants to launch his own startup after college and was impressed with UI’s strong computer science department and “spirit of entrepreneurship and innovation.” (He’s also quick to point out that Marc Andreessen, co-founder of Netscape, and Mark Levchin and Luke Nosek, PayPal founders, attended UI.)

Jain already has business experience: He and friends from high school launched an organization called Pilot, which hosts events for high school students across the country to teach them how to build apps and Web sites.

“The old paradigm of education was that you get good at one thing and you do that one thing for the rest of your life,” Jain says. “Nowadays, students don’t know what jobs are going to exist in the next two to three years. It’s becoming less and less important to teach specific things and more important to teach how to think critically and solve problems.”

Colleges have been racing to add classes and majors — sometimes starting programs from scratch, other times expanding existing programs or creating majors across different fields of study. In 2007, North Carolina State University launched the Institute for Advanced Analytics, whose mission is to teach students how to derive insights from reams of data. In 2013, the University of Texas launched UT3D, billed as the nation’s first comprehensive 3-D production program that trains students to produce 3-D plays and documentaries and to explore innovations such as “glasses-free” 3-D for TVs, tablets and cellphones. And this fall, the University of Maryland will add an upper-level data science class to teach students how to mine vast quantities of user-generated data for analytical insights. U-Md. has offered a class in mobile app development since 2010.

“There are a lot of fads and cool things that come and go, schools trying to create small programs for someone to try to get a job in a specific area,” acknowledges Brandi Adams, associate director of undergraduate computer science studies at U-Md. “The problem is, if you’re only familiar with one type of software, you won’t be prepared for disruptions in the market. It’s really important for students to learn the theory behind things — but also to practice.”

Other schools with solid reputations in science,

technology and engineering are mixing in healthy doses of the humanities. This fall, Stanford is offering a new joint major in computer science paired with English or music. “We’re looking to help cultivate, and provide academic structure for, a new generation of humanists who can code and computer engineers whose creativity and adaptability is enhanced by immersion in the humanities,” says Nicholas Jenkins, associate English professor.

Carnegie Mellon University, one of the nation’s premier computer science schools that also ranks high in the arts, is turning part of its library into a collaborative workspace. Also on tap are eight new areas of concentration, including media design, physical computing and intelligent environment.

“It’s a different brand of technologists that we want to train,” says Thanassis Rikakis, Carnegie Mellon’s vice provost for design, arts and technology — itself a relatively new position, created in 2012. “We want to train people who are good at what they do, but work in teams across technology and the arts. That is becoming a key strategic strength.”

Nathan Hahn, 22, of Annandale just finished his senior year at Carnegie Mellon and is pursuing a PhD in human-computer interaction. He says high school tech geeks need to think beyond coding and consider whether what they invent will fit well with



“human mental models: It has to be understandable from a person’s point of view; it has to be usable.”

“The big thing nowadays is design,” he says.

“Application development has become a lot more about understanding requirements that an individual would give you, and you turning it into a great application. It’s more like understanding what a person wants from a business perspective than a computer science perspective.”

Students and faculty caution that not all new tech careers are equal. Some, like user interface/experience manager, are more art-focused. High school guidance counselors and heads of startups say applicants should think hard about what they like doing on the Internet: playing video games or designing them? Testing whether a game works or marketing it?

The importance of design in careers like user experience/user interface manager and video game designer has led to design schools’ getting into the tech career-prep business, too. The Maryland Institute College of Art offers classes in Web design and data visualization; the Savannah College of Art and Design offers a major in video game design.

It was SCAD’s video game major that persuaded Henry Harrison, 19, of Baltimore to enroll. He

estimates that he has played video games since his grandmother sat him in front of a screen and taught him to play Pac-Man. But he's more interested in design than in coding, and wanted a school that would nurture him as an artist. "A lot of the reasons I play the games I do is they feel good to look at," he says. "If I don't know as much about coding as anyone else, I can look at tutorials about how to code."

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George Mason computer science professor Pearl Wang: "Students come in and say, 'I can do all this stuff on my computer,' and I think, 'How good are you at math?' " (Andre Chung/For The Washington Post)

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Harrison's path may be the right one for those who are interested in the look and feel of something on the Web, but those interested in building the next Google or Yahoo or Tumblr should assess their comfort level with numbers. "Students come in and say, 'I can do all this stuff on my computer,' and I think, 'How good are you at math?' " says Pearl Y. Wang, associate chair of George Mason University's computer science department.

She notes, for instance, that making a search engine actually work requires a deep knowledge of math and statistics. "I want to make sure [a] kid is getting an education that will help them have a solid, long-term career in the field," she says. "You can create a

game that sells 1,000 copies in the app store, but then what do you do? Write another version of the game?”

Tumblr, the New York-based microblogging platform and social networking Web site founded in 2007, has 250 employees and is adding entry-level positions, says Lindsey Dole, human resources director. She urges high schoolers who want to work for Tumblr to take on side projects that incorporate Tumblr to catch the company’s attention for an internship or a post-college job. She says young hires need to prove they’ve been part of a team that developed a product and can articulate what worked and what didn’t.

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Lindsey Dole of Tumblr: “We look for people who can contribute in areas not just in their roles.” (Yana Paskova/For The Washington Post)

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Tumblr’s Web site lists jobs in engineering, marketing and sales, but programmers should have a computer science degree, Dole says. “We look for people who can contribute in areas, not just in their roles,” she says. “We love people who are well-rounded, ambitious and team-oriented.”

Toby Shapinsky is at the start of the college search process — he’ll be a junior this fall at Wilson High in Northwest D.C. — and he hopes to land a job writing

code for spaceships. He's the kid who designed a dreidel simulator program demonstrating the inefficiency of the dreidel game and built a computer when he was 13.

“I want to go to school with people who have been learning outside of class and know how to teach themselves stuff,” he says. “When you find people like that, there are no boundaries.”

Adds his mom, Helen: When she was in college, “you went to class, you had a teacher who had the knowledge, and they gave it to you. That's still the model of education. But the world is terribly different. For people who are self-directed and learn by doing, the knowledge is everywhere.”

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