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# 12 IT skills that employers can't say no to

By Mary Brandel, Computerworld, 07/11/07

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Have you spoken with a high-tech recruiter or professor of computer science lately? According to observers across the country, the technology skills shortage that pundits were talking about a year ago is real (see "[Workforce crisis: Preparing for the coming IT crunch](#)").

"Everything I see in Silicon Valley is completely contrary to the assumption that programmers are a dying breed and being offshored," says Kevin Scott, senior engineering manager at Google and a founding member of the professions and education boards at the Association for Computing Machinery. "From big companies to start-ups, companies are hiring as aggressively as possible."

Many recruiters say there are more open positions than they can fill, and according to Kate Kaiser, associate professor of IT at Marquette University in Milwaukee, students are getting snapped up before they graduate. In January, Kaiser asked the 34 students in the systems analysis and design class she was teaching how many had already accepted offers to begin work after graduating in May. Twenty-four students raised their hands. "I feel sure the other 10 who didn't have offers at that time have all been given an offer by now," she says.

Suffice it to say, the market for IT talent is hot, but only if you have the right skills. If you want to be part of the wave, take a look at what eight experts -- including recruiters, curriculum developers, computer science professors and other industry observers -- say are the hottest skills of the near future.

## 1) Machine learning

As companies work to build software such as collaborative filtering, spam filtering and fraud-detection applications that seek patterns in jumbo-size data sets, some observers are seeing a rapid increase in the need for people with machine-learning knowledge, or the ability to design and develop algorithms and techniques to improve computers' performance, Scott says.

"It's not just the case for Google," he says. "There are lots of applications that have big, big, big data sizes, which creates a fundamental problem of how you organize the data and present it to users."

Demand for these applications is expanding the need for data mining, statistical modeling and data structure skills, among others, Scott says. "You can't just wave your hand at some of these problems -- there are subtle differences in how the data structures or algorithms you choose impacts whether you get a reasonable solution or not," he explains.

You can acquire machine-learning knowledge either through job experience or advanced undergraduate or graduate coursework, Scott says. But no matter how you do it, "companies are snapping up these skills as fast as they can grab them," he says.

## 2) Mobilizing applications

The race to deliver content over mobile devices is akin to the wild days of the Internet during the '90s, says Sean Ebner, vice president of professional services at Spherion Pacific Enterprises, a recruiter in Fort Lauderdale, Fla. And with devices like BlackBerries and Treos becoming more important as business tools, he says, companies will need people who are adept at extending applications such as ERP, procurement and expense approval to these devices. "They need people who can push

applications onto mobile devices," he says.

### **3) Wireless networking**

With the proliferation of de facto wireless standards such as Wi-Fi, WiMax and Bluetooth, securing wireless transmissions is top-of-mind for employers seeking technology talent, says Neill Hopkins, vice president of skills development for the Computing Technology Industry Association (CompTIA). "There's lots of wireless technologies taking hold, and companies are concerned about how do these all fit together, and what are the security risks, which are much bigger than on wired networks," he says.

"If I were to hire a wireless specialist, I'd also want them to understand the security implications of that and build in controls from the front end," agrees Howard Schmidt, president of the Information Systems Security Association and former chief information security officer and chief security strategist at eBay Inc.

But don't venture into the marketplace with only a wireless certification, Hopkins warns. "No one gets hired as a wireless technician -- you have to be a network administrator with a specialization in wireless so you know how wireless plays with the network," he says.

### **4) Human-computer interface**

Another area that will see growing demand is human-computer interaction or user interface design, Scott says, which is the design of user interfaces for the Web or desktop applications. "There's been more recognition over time that it's not OK for an engineer to throw together a crappy interface," he says. Thanks to companies like Apple Inc., he continues, "consumers are increasingly seeing well-designed products, so why shouldn't they demand that in every piece of software they use?"

### **5) Project management**

Project managers have always been in high demand, but with growing intolerance for over-budget or failed projects, the ones who can prove that they know what they're doing are very much in demand, says Grant Gordon, managing director at Kansas City-based staffing firm Intronic Solutions Group. "Job reqs are coming in for 'true project managers,' not just people who have that denotation on their title," Gordon says. "Employers want people who can ride herd, make sense of the project life cycle and truly project-manage."

That's a big change from a year ago, he says, when it was easy to fill project management slots. But now, with employers demanding in-the-trenches experience, "the interview process has become much tougher," Gordon says. "The right candidates are fewer and farther between, and those that are there can be more picky on salaries and perks."

The way Gordon screens candidates is by having on-staff subject-matter experts conduct interviews that glean how the candidate has handled various situations in the past, such as conflicting team responsibilities or problem resolution. "It's easy to regurgitate what you heard from PMBOK [the Project Management Institute's Project Management Body of Knowledge], but when it comes to things like conflict management, you start seeing whether they know what they're doing."

In one case, Gordon asked a candidate to describe how he'd go about designing a golf ball that goes farther by changing the dimples on the ball. "No one has the answer to questions like that, but it shows how they think on their feet and how they can break down a problem that's pretty ambiguous into smaller segments," he says.

### **6) General networking skills**

No matter where you work in IT, you can no longer escape the network, and that has made it crucial for non-networking professionals, such as software engineers, to have some basic understanding of networking concepts, Scott says. At the very least, they should brush up on networking basics, such as TCP/IP, Ethernet and fiber optics, he says, and have a working knowledge of distributed and networked computing.

"There's an acute need for people writing applications deployed in data centers to be aware of how their applications are using the network," Scott says. "They need to understand how to take advantage of the

network in their application design." For instance, to split three-tier applications among multiple machines, developers need to know how to build and coordinate that network. "People who understand basic distributed systems principles are very valuable," Scott says.

## **7) Network convergence technicians**

With more companies implementing voice over IP, there's a growing demand for network administrators who understand all sorts of networks -- LANs, WANs, voice, the Internet -- and how they all converge together, according to Hopkins.

"When something needs to be fixed, companies don't want the network administrator to say, 'Oh, that's a phone problem,' and the phone guy to say, 'Call the networking guy,'" Hopkins says. "Our research has validated that there's a huge demand for people who've been in the phone world and understand what the IT network is, or someone managing the IT network who understands the voice network and how it converges."

## **8) Open-source programming**

There's been an uptick in employers interested in hiring open-source talent, Ebner says. "Some people thought the sun was setting on open source, but it's coming back in a big way, both at the operating system level and in application development," he says. People with experience in Linux, Apache, MySQL and PHP, collectively referred to as LAMP, will find themselves in high demand, he says.

Scott Saunders, dean of career services at DeVry University in Southern California, is seeing the same trend. "Customer dissatisfaction and security concerns are driving this phenomenon, especially in the operating system and database markets," he says.

## **9) Business intelligence systems**

Momentum is also building around business intelligence, Ebner says, creating demand for people who are skilled in BI technologies such as Cognos, Business Objects and Hyperion, and who can apply those to the business.

"Clients are making significant investments in business intelligence," Ebner says. "But they don't need pure technicians creating scripts and queries. To be a skilled data miner, you need hard-core functional knowledge of the business you're trying to dissect." People who can do both "are some of the hottest talent in the country right now," he says.

## **10) Embedded security**

Security professionals have been in high demand in recent years, but today, according to Schmidt, there's a surge in employers looking for security skills and certifications in all their job applicants, not just the ones for security positions.

"In virtually every job description I've seen in the last six months, there's been some use of the word security in there," he says. "Employers are asking for the ability to create a secure environment, whether the person is running the e-mail server or doing software development. It's becoming part of the job description."

This, Schmidt says, mirrors the trend toward integrating security into companies' day-to-day operations rather than considering it an add-on role performed by a specialist. Companies will still need security specialists and subject-matter experts, Schmidt says, but more and more, every IT person a company hires will have to have an understanding of the security ramifications of his area.

Hopkins echoes that sentiment. "Every single certification we do now has an element of security built in," he says. "We keep getting feedback from the market researchers that security touches everything and everyone. Even an entry-level technician better understand security."

Saunders says DeVry University has responded to this demand by adding a security curriculum to some of its campuses throughout the U.S. "Companies are increasingly interested in protecting their assets against cyberterrorism and internal threats," he says.

## **11) Digital home technology integration**

Homes are increasingly becoming high-tech havens, and there has been enormous growth in the home video and audio markets, and in home security and automated lighting systems. But who installs these systems, and who fixes them when something goes wrong?

To answer that question, CompTIA developed a certification in cooperation with the Consumer Electronics Association, called Digital Home Technology Integrator. "It's the hottest and most vibrant market we've seen in a long time," Hopkins says.

## **12) .Net, C #, C ++, Java -- with an edge**

Recruiters and curriculum developers are seeing job orders come in for a range of application frameworks and languages, including ASP.Net, VB.net, XML, PHP, Java, C#, and C++, but according to Gordon, employers want more than just a coder. "Rarely do they want people buried behind the computer who aren't part of a team," he says. "They want someone with Java who can also be a team lead or a project coordinator."

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