6 ways to solve tech talent crunch

A good tech worker is hard to find. And with the way Silicon Alley is heating up, employers will have to get creative to build their A-teams.

By Anne Field
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A single stat illustrates the size of the biggest problem facing the U.S.'s burgeoning tech economy: By 2020, there will be 1.4 million computer-specialist job openings, according to the U.S. Department of Labor. But projections show universities are likely to produce only enough qualified graduates to fill about 30% of these jobs.

Employment in local digital companies grew 80% from 2007 to 2011, according to the New York City Economic Development Corp. Giants like Facebook and Google, Wall Street firms that need technologists for their back-end systems, and the startup community have vacuumed up the city's tech talent pool.

"For a lot of companies, it seems that all the good [employees] are doing their own startups or working—and getting paid a lot of money," said Morgan Lang, co-founder of 9mmedia, a 10-year-old, Manhattan-based software company that develops mobile and Web apps and hires only highly experienced programmers.

He has 22 employees and would like to add three more—developers with expertise in iOS, Android or Ruby on Rails. Good luck, say the experts.

"We don't have a jobs crisis," said Bruce Bachenheimer, clinical professor of management at Pace University. "We have a skills crisis."

Crain's surveyed academics, company owners and other experts for ideas for tackling the tech talent shortage. Here are six agenda items for the tech world.

Pass legislation to liberalize STEM visas.
Since there aren't enough U.S.-born techies to go around, one alternative is to make it easier for foreign students with the right skills to get visas to work here. About 60% of all foreign graduate students in the U.S. in 2010 were enrolled in science and engineering.

In January, four U.S. senators introduced a bill to increase the number of visas for immigrants with advanced technology skills and green cards. And President Barack Obama, in a speech made the next day calling for comprehensive immigration reform, also underscored the issue. "People are very encouraged that legislation could be passed this year," said Kathryn Wylde, the CEO of the Partnership for New York City.

If it takes longer, according to Vivek Wadhwa, author of *The Immigrant Exodus: Why America Is Losing the Global Race to Capture Entrepreneurial Talent*, New York City could find a stopgap solution: helping to match up foreign-born graduate students with employers and providing financial and legal help to address any immigration problems that arise. "It would send a positive message to graduates that New York wants you," he said.

Step up recruiting.
While bigger tech companies routinely tour campuses of top schools looking for the best and brightest, startups and smaller companies lack the resources to do the same thing.

One solution is a group effort: Get startups to team up together. Take the NYC Tech Talent Draft. Launched by the city Economic Development Corp. in the spring of last year, it's a series of on-campus career information.

Last spring and fall, about 700 students attended sessions at seven schools run by representatives of more than 40 startups. "This is a way to take a lot of small companies and leverage them, so you're recruiting for a collection of cool startups," said Mr. Bachenheimer. "It's an economies-of-scale thing."

Another approach is one being taken by HackNY, with support from the New York City Council. The nonprofit recently hired what Mr. Korth called an "evangelist" who, among other tasks, will conduct college recruitment tours aimed at talking up the city's technology sector.

"If we keep turning New York City into a tech hub, it will continue to make people think about coming here," said Matt Norman, vice president of human resources at the 700-employee, Manhattan-based Gilt Groupe. "They will come if they see there's opportunity

Finish the big university expansions.
Over the past two years, the Bloomberg administration has unveiled its Applied Sciences NYC initiative to step up the number of engineering and computer science graduate students schooled in the area.

Announced last year, the NYU Center for Urban Science and Progress, a 460,000-square-foot engineering and science school in Brooklyn, is a joint effort between New York City, the MTA, NYU-Poly and a consortium of universities and technology companies.

Also unveiled last year: the Institute for Data Sciences and Engineering, a 44,000-square-foot space on Columbia University's campus, with $15 million in financial help from the city.

Perhaps most ambitious is the 2 million-square-foot, $2 billion engineering and computer science campus on Roosevelt Island to be run by Cornell University and Technion-Israel Institute of Technology.

These are long-term solutions, however. For example, Cornell NYC Tech will be completed in phases. Although the first will be up and running in 2016, the last won't be fully cooked until 2037.

Attract more women to computer science.
One way to find talent is to nurture a significant segment that's severely underrepresented among the ranks of techies: women. Only about 24% of computer science and math employees are women, according to a 2011 study from the U.S. Department of Commerce.

Founded last year by Reshma Saujani, a former deputy public advocate of New York City, Girls Who Code is an eight-week summer program for 13- to- 17 year-old girls, with backing from Twitter, Google, General Electric, eBay and others.

Each week focuses on a theme—say, mobile apps—and students attend talks with such speakers as Foursquare co-founder Dennis Crowley. In the last two weeks, they complete a final project—last summer's session included apps for finding a nearby protest that suits your own leanings and another for starting book clubs with peers around the country, among others—and then present it to a group of tech entrepreneurs.

Most of the 20 girls in the inaugural session were from underprivileged homes. Computers were donated by Silicon Valley Bank for the classroom "because they didn't have their own," said Ms. Saujani.

All the program's participants reported they're definitely or more likely to major or minor in computer science in college, according to Ms. Saujani. And some launched their own high school coding clubs.

Develop alternative education programs, such as apprenticeships.
Here's another possibility: hiring developers who have attended alternative education programs. A number of these efforts already are underway.

Consider Enstitute. Launched last fall, it offers a two-year, full-time apprenticeship program for 18- to 24-year-olds. Participants, according to co-founder Kane Sarhan, range from high-school graduates to students with liberal arts degrees looking for marketable skills.

For the first year, students work 40 hours a week at technology startups, getting their feet wet in a variety of areas, from marketing to programming. They're paid a stipend of $300 to $400 a week; enough, said Mr. Sarhan, "so they can live on a student's budget."

At the same time, they take 12 weeks of basic front- and back-end development instruction. During the second year, they specialize in one specific area—technical development or design, or business.

According to Mr. Sarhan, each of the 10 students in the inaugural class wants to stay in New York City after they've completed the program.

HackNY, which offers a 10-week summer program that is entering its fourth year, places an even greater emphasis on in-the-field experience. It provides apprenticeships at New York startups to more than 30 undergraduates, called fellows, from about 20 universities. Students have come from as far west as Stanford University and as far east as Barcelona.

According to co-founder Evan Korth, "Most of the students who have graduated have taken jobs in New York."

Other places, like General Assembly in Manhattan, are private companies running classes in which students work on substantive projects that mimic the type of work they might do at a company.

Offer on-the-job training.
According to 9mmedia's Mr. Lang, many of his employees are veteran programmers with experience in older, more established languages like Java that are more complicated and slower-going than such newer choices as Ruby on Rails. But instead of hiring replacements, he provides his staff with training while they're at work. That can mean trying their hand at a less-critical project using the new language, or one created expressly for the purpose of training.

Mr. Lang cautions that it's an ongoing effort, however. He started the training program three years ago—and is still at it today. What's more, such efforts take employees away from regular work. "It's repurposing of existing developers," he said. "But it's a lot easier than hiring someone who's barely written a line of code before. Going from zero to awesome takes four to eight years."

He has another related suggestion: that New York City should team up with a company offering online programming instruction and offer subsidized tuition for employees, who would take the courses either during or after working hours.

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