



SJSU in the News: Engineering Dean Explains Shortage of Analog Engineers

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Cassidy: Big Silicon Valley demand for analog engineers' 'black art'
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You want a good look at Silicon Valley's bipolar job market? Step into the 11th-floor office of Young Sohn.

The CEO of Santa Clara-based Inphi is tearing his hair out trying to hire the engineers he needs to design the chips required to make high-speed digital communication possible. Never mind the plentiful electrical engineers who create the semiconductors that are the building blocks of our digital gadgets. Sohn hungers for analog engineers, the geeks who rely on their gut — and, yes, design principles — to build the chips that our digital gadgets need to capture and replay the real world — video and sound, for instance.

"We call it a black art," Sohn says, going a little Harry Potter on us. "Those who practice a black art become very precious."

So precious that Sohn sounds like one of those dot-com-bubble CEOs as he talks about the company's referral bonus, about how he's hired teams of faraway engineers and let them stay right where they are as long as they'd work for him.

"If there are a few guys who don't want to come, then you have to set up a design center around them," Sohn says, citing, for example, an Inphi group working in London. "That's how much power they have."

And then there was the engineer that Sohn hired even though the guy said he couldn't start for about a year because he was bonding with his new baby.

All of which must seem especially cruel to those among the 10.3 percent of the valley that is unemployed and might be struggling just to get an interview. But that is life in the valley in 2011. Many have noted how [Facebook](#), [Google \(GOOG\)](#), [Apple \(AAPL\)](#) and hot startups are fighting over programmers with just the right skills. The good fortune of analog engineers is lesser known, but just as swell for those with the talent. Belle Wei, dean of San Jose State's college of engineering, isn't surprised that analog chipmakers are having a hard time finding the talent they need. "This has been an ongoing challenge for some time," she says. "Analog design is different from digital design. It requires a lot of practice and it can't be automated extensively. It does take a lot of training and so it's a long learning curve."

Analog is not black and white — or more precisely, it's not 1s and 0s. The analog world is a world of waves, unlike the digital world of off or on. In analog design there often is no one right answer, just one best answer.

Wei, who says that San Jose State has beefed up its analog offerings in recent years, likens the analog career path to an apprenticeship. (Indeed, Sohn says the average age of his engineers is 43, statistically ancient in the youth-obsessed valley.)

Sohn, who competes for talent with bigger concerns like [Intel \(INTC\)](#), Broadcom, [Cisco \(CSCO\)](#), Marvell, Texas Instruments and many others, has grabbed up the talent that he can. Inphi, he says, has doubled in size to about 200 workers in the past two years.

There have been few better times for students to go into analog, Wei says, putting in a plug for San Jose State's analog push, which was funded in part by companies hungry for talent. Analog chips, or chips combining analog and digital design, are needed to capture images and sound and translate them into digital information for transmission or storage, for instance. Without analog there would be no digital

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revolution.

And, maybe you've noticed: Gadgets that process photos, videos and sound are exploding in popularity and becoming ever-more sophisticated, meaning somebody's got to design all those analog chips.

Hamid Rategh, Inphi's senior director of engineering, can't exactly remember wanting to do anything else. Pick your analogy: Analog designers are like baseball's crafty left-handers or music's play-it-by-ear pianists or the West's horse whisperers.

"It never occurred to me that I could have done otherwise," Rategh says of his chosen path. "I'm one of those engineers, you throw me at any problem and I'll enjoy solving it."

Sounds like a line right out of an analog engineer's job description. The kind that valley companies are busily writing and posting on job sites these days.

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