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Guest: STEM graduate shortage? Computer science is where the future jobs are

Nationwide there is a well-documented shortage of graduates in computer science, writes guest columnist Edward D. Lazowska.

By Edward D. Lazowska

Special to The Times

TECHNOLOGY workforce issues are much in the news these days, stimulated by proposed changes to the nation's H-1B guest-worker visa policy. A recent report from the Economic Policy Institute on science, technology, engineering, and mathematics (STEM) workforce supply and demand was covered last week by The Seattle Times, The Washington Post and others. The report argued that there is no shortage of graduates in STEM fields overall, and that this applies to all of the various subfields of STEM, including computer science.

Allow me to inject a few facts into the conversation. As politician Daniel Patrick Moynihan famously said, "Everyone is entitled to his own opinion, but not his own facts."

It's indeed the case, both nationwide and in our state, that there is no overall shortage of STEM graduates. But this is not news — it has been the case for many years. This does not mean you should not major in a STEM field if that is your passion, any more than grim job prospects mean you should not major in journalism.

However, nationwide there is a well-documented shortage of graduates in computer science. The Bureau of Labor Statistics projects that 70 percent of all new jobs across all STEM fields during this decade, across engineering, the physical sciences, the life sciences, and the social sciences, will be in computer science. More than three-quarters of a million new jobs. The field is booming.

In Washington state there is a well-documented shortage in the health professions, engineering and in computer science. A 2011 study by the Higher Education Coordinating Board carefully

examined the gap between supply and demand for all fields, identifying the fields with significant gaps at the two-year, four-year and graduate education levels.

Computer science has by far the widest gap, with the health professions and engineering next. At the bachelor's degree level, the gap between supply and demand in computer science is nearly twice as large as the gap in engineering, and three times as large as the gap in the health professions. In comparison, other fields barely move the needle.

While students educated in one field do sometimes take jobs in other fields, and while many employers require a diverse range of employee skills, preparation and skills vary significantly from field to field. STEM graduates are not interchangeable.

Most civil engineers are not prepared to design biomedical implants. Most biomedical engineers are not prepared to design bridges. Most computer scientists are not prepared to practice surgery. And most chemists are not prepared to design complex software systems.

To drive this point home: During the most recent year, 85 percent of all students hired from the University of Washington by Microsoft, Google, Amazon.com and Facebook for internship and permanent positions had degrees from a single academic program: Computer Science & Engineering on the Seattle campus.

I do not take a position here on the wisdom of H-1B visa expansion.

Nor do I deny that there are some individuals in the information-technology field who, unfortunately, are unemployed or underemployed.

However, anyone in the computer-science education business, or attempting to recruit for the IT field, is well aware of the extraordinary competition for both new graduates and seasoned professionals with state-of-the-art experience and skills, and of the incredible change-the-world opportunities that this field affords.

I do take a position on the wisdom of expanding enrollment in Computer Science & Engineering at the University of Washington. Due to staffing and facilities limitations, our program — ranked among the top 10 in the nation, along with the likes of Stanford, MIT, Carnegie Mellon and Berkeley — can accommodate only about 25 percent of the students who successfully fulfill prerequisite courses and apply to the major.

This is a critical issue for Washington's economy, but more important for Washington's students: 80 percent of our Computer Science & Engineering undergraduates are Washington residents, and the vast majority remain here after graduation.

Computer science: It's where the jobs are. It's also where the future is.

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