



HOW OREGON WORKS

A SPECIAL SERIES ON OREGON'S WORKFORCE

OREGON'S WORKFORCE
AND THE JOBS AND SKILLS
TECHNOLOGY

GAP

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PORTLAND BUSINESS JOURNAL

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FROM OUR SPONSORS



Data breach: It's become an unfortunate part of our landscape, "normalized" because it impacts companies of all types, from large corporations to mid-sized hospitals to small colleges, and everything in between. For job seekers with cybersecurity skills, that's welcome news. The reality, however, is that employers can't hire them fast enough.

Enter Portland Community College, along with Mt. Hood Community College and the University of Oregon. Deemed Centers of Academic Excellence in Cyber Defense, all have disciplines to educate the next generation of cyberspecialists.

Cyber defense is an example of an in-demand technology sector offering significant advancement potential. Others include engineering, health care, aviation and emergency response. And teaching to these subjects is where Oregon's 17 community colleges shine.

Our challenge is funding, which is why the state community college budget request is so important. Funding to mitigate the shortage of trained workers will enable our students, and ultimately our state, to thrive.

MARK MITSUI
President
Portland Community College



Our team at Portland Leadership Foundation works tirelessly to strengthen a just community through the transformation of government and service organizations by developing multicultural leaders. We dream of a day where the greater Portland area's workforce reflects the diversity and strengths of the people who live here.

Through our partnership with Worksystems — an organization that invests in the recruitment, training and vetting of diverse talent — we've been able to develop and sustain a range of initiatives to empower rising leaders, including the Emerging Leaders Internship (ELI) and a new career mentoring program.

Worksystems has been able to secure resources and make investments that have empowered our organization to meet the current and future workforce needs in the technology sector in our region. Starting this fall, we are launching ELI Tech, which is designed to successfully mobilize Oregon's diverse college-going tech talent to land internships at one of Portland's tech companies. This new thrust comes as a result of Worksystems' vision to connect assets and bring positive systemic change in our community.

BEN SAND
CEO
Portland Leadership Foundation



There is no industry that has a more significant impact on the way we live and work than the technology industry. As trusted advisors to many members of the Oregon technology sector, Stoel Rives attorneys seek to enable our clients to manage risks, navigate changes and position themselves for success in the coming years.

We are committed to helping our clients meet today's challenges with an array of legal services — from formation and financing through protecting intellectual property, managing a workforce, marketing products and effecting strategic transactions that grow revenue and expand markets.

Our team-based approach combines deep industry knowledge, legal insight, creativity, design thinking, and problem-solving experience to help our clients develop the legal framework needed to form, protect and grow their company.

We applaud the Portland Business Journal's in-depth focus on how important technology is to Oregon's future.

MATT WILMOT
Partner
Stoel Rives LLP



PSU transforms lives and provides upward socioeconomic mobility. At our June graduation, I asked those who were the first in their family to graduate to stand. Over a third of those gathered on the Rose Garden floor got to their feet. It was a poignant reminder of the opportunities PSU provides to Oregonians.

I am gratified that PSU cultivates a culturally and economically diverse population of science, technology, engineering and math (STEM) students.

PSU has received over \$125 million in federal funds to provide undergraduate, first-generation STEM students with mentors, tutors, cultural engagement, and research opportunities. We make the sciences affordable and accessible.

I am grateful to Intel for partnering with PSU in this important mission. We collaborate on regional programs such as the Portland Metro STEM Partnership, Oregon MESA and the Intel Northwest Science Expo. Intel supports faculty research, student programs, internships and hiring events. Intel is the top employer of PSU graduates. More than 1,400 of our alumni work there. Thank you, Intel, for believing in our students.

RAHMAT SHOURESHI
President
Portland State University




IN THE CLASSROOM

PUTTING STUDENTS TO WORK

WARREN HARRISON, CHAIR OF PSU'S COMPUTER SCIENCE DEPARTMENT, ON THE SCHOOL'S INTERNSHIP PROGRAM WITH LOCAL SOFTWARE COMPANIES



In January 2012, a group of Portland technology executives and officials at the Portland State University Maseeh

College of Engineering and Computer Science launched the PSU/PDX Cooperative Education Program to train the next-generation of workers.

The program launched with 15 students and six companies. Today, there are 16 industry partners and 129 participating students. Partner companies include Act-On Software, CDK Global, Tripwire, Viewpoint, Jama Software and The Standard. During the 24-month program, students work 20 hours a week for \$20 per hour, with the ability for raises, while also taking classes. Students rotate through three different positions at two or more companies.

There are typically 32 internships for each program cycle. We talked to computer science department chair Warren Harrison to learn more.



Warren Harrison

What is the biggest difference you see in students before and after the program? When they start out, students think creating software products is all about writing computer code

and that all software companies are the same. After three rotations through the program, they've had a chance to participate in three functional roles (software development, developer operations and quality assurance) at different companies. When students leave the program, they have a better understanding of the functional role they want to make a career out of, as well as the characteristics they're looking for from a company.

Have you seen demand from students and company partners increase?

We get information requests from

companies on a monthly basis.

We advocate controlled growth, so companies that meet our criteria are often put on a waiting list to join.

How can a company get involved?

They usually start by contacting me, or one of the members of our steering committee. Admission to the program is based on a vote of the steering committee. The committee is made up of representatives from Tripwire, CDK Global, Viewpoint, NWEA, Jama Software and Multnomah County.

How big is the need for this program?

From a student standpoint, internships, especially in tech, are essential. Developing software for a commercial product in a team environment bears little resemblance to class projects. You can only get so far in terms of trying to replicate the environment they will face when they graduate in the classroom. From a company standpoint, especially for small- and medium-sized ones, internships provide a way to communicate to

students that they actually exist, and they are a cool place to work. In general, high-quality graduates tend to migrate to companies they've heard of. Smaller companies, especially those that are not directly consumer-facing, have a hard time attracting the best new graduates. Seventy-five percent of PCEP interns begin their career, after graduation, at a PCEP company.

And what about for PSU? From

Portland State's perspective, there are three primary impacts. First, local companies get a chance to interact with our students and discover how outstanding they are. For example, before PCEP, Tripwire seldom hired recent college graduates, but after being exposed to the PCEP interns, they have changed that custom. Secondly, we have found that we have begun to be a destination of choice for students because of our demonstrable connections with the local software industry. Even students that aren't able to join the PCEP program benefit from our industrial network. And finally, it has had an impact on our curriculum. Feedback from industry, frequent visits to partner facilities and discussions with our interns has led to changes in our software engineering coverage.

- Malia Spencer

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THE RISING IMPORTANCE OF ARTIFICIAL INTELLIGENCE FOR YOUR BUSINESS

Artificial Intelligence, or AI, is no longer the realm of science fiction. AI has permeated the ways in which we live and conduct business like never before. From self-driving cars, medical diagnosis systems, and virtual personal assistants to chat bots and even AI-generated movie scripts, it seems AI is everywhere.

And yet, AI and our understanding of its applications are constantly evolving, and companies have only scratched the surface in finding ways to apply AI to create efficiencies. AI is expected to be increasingly utilized in a wide range of industries and professions – in our own legal profession, AI has been used for some time in conducting legal research and document review, and will continue to transform the way we practice the law. Now more than ever, companies should have a firm understanding of AI and the impact it can have.

While no one definition of AI exists, AI generally refers to the technologies and systems that make it possible for computers to learn from experience and perform tasks involving human-like decision making. AI is a broad field of study that encompasses many different technologies, with terms often mistakenly used for one another. For example, machine learning is a term often used interchangeably with AI, although machine learning is typically viewed as a branch or subset of AI that is based on the idea that systems can learn from data, identify patterns, and make decisions, all with minimal human intervention.

AI poses a number of unique regulatory, legal, and ethical issues. Federal regulation of AI is slowly gaining momentum, but the speed in which new technolo-



Kevin Crosman,
Stoel Rives



Matt Wilmot,
Stoel Rives

gy advances and the difficulty in defining what technologies even qualify as AI present challenges. The House-passed SELF DRIVE Act and the Senate-introduced AV START Act both seek to establish a federal role in ensuring the safety of highly automated vehicles. Other regulatory efforts are focusing on simply understanding the technology and its ramifications and are far from creating any real AI regulation. For example, the FUTURE of AI Act would create an advisory committee on AI, and the AI JOBS Act calls for a report on AI and its impact on the workforce. In the meantime, existing federal and state oversight of areas such as privacy and cybersecurity, and self-regulation by the private sector, are the main ways in which AI is currently

being regulated.

Novel legal issues regarding AI abound as well. Analyzing product liability claims presents complex legal questions – who is liable for the harm caused by a product utilizing AI? Because AI systems can learn and adapt without human intervention, is it fair to impute liability on a designer or manufacturer who can't necessarily foresee how that AI system will act? One proposed

solution to these questions calls for the creation of an agency tasked with certifying the safety of AI systems, and creating a liability system whereby designers, manufacturers, and sellers of certified AI would be subject to limited legal liability compared to those that introduce uncertified AI into the marketplace.

The increased use of AI in marketing also creates unique legal concerns regarding data privacy. AI employs enormous amounts of data in helping predict consumer purchasing behavior. Yet, as AI advances, companies may find it more difficult to understand exactly how AI is making these predictions. As more states and countries pass increasingly restrictive laws on how personal data can be used, companies should be mindful of how these new laws intersect with the advances that AI is making in using personal data.

AI also has far ranging ethical implications to consider. Questions ranging from whether artificial intelligence beings should be granted civil rights to whether AI should be developed and used in weapons are all currently being debated. Major companies in the tech industry including Amazon, Facebook, Google, IBM, and Microsoft recently established the Partnership on AI to study and formulate best practices on AI technologies in recognition of these growing ethical concerns.

In short, AI is here to stay, and companies would be wise to consider the different ways in which it can improve their operations. As with any new technology though, companies should proceed sensibly and with an eye towards the far-ranging legal and ethical effects that such use may have.

HELPING OREGON TECH COMPANIES REACH THE PEAK OF INNOVATION AND GROWTH

Stoel Rives' multi-disciplinary legal team offers our **Technology** clients deep industry knowledge, innovative strategies, and a strong commitment to helping them thrive in today's complex legal and business environment.



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