Inventing the Future with CSIT

Two computer science majors, two different paths creating two futures for many

What does a 2015 Computer Science graduate and a Professor of Computer Science, Emeritus at Princeton University have in common? When asked, Sherri Harms, Computer Science Information Technology (CSIT) Department Chair Professor will tell you, “Larry Peterson ’79, Ph.D. practically invented the internet while Neil Emeigh ’15 makes a living off of it. They are some of the many technology stars who have graduated from the CSIT Department at the University of Nebraska at Kearney (UNK).”

Emeigh grew up and graduated from the small town of Wilber where he earned a regent’s scholarship to UNK. Since Emeigh was 14 years old, he has been busy programming computers and soon found ways to make some income online, mostly related to the Search Engine Optimization (SEO) industry. When Emeigh turned 17, he partnered with a computer science instructor out of North Carolina and created his first business.

During the summer of 2014, Emeigh bought out his partner. “This was the start of an everlasting job, stress, hobby …” said Emeigh. “At that point, I began managing the business myself and hiring freelancers to do all the work. I would say I’m the ‘project manager,’ but I also handle customer support, marketing, research and whatever else needed to be done. The majority of what I do these days, in terms of my business, is hire freelancers to create software for a large market. Then, I project customer’s need rather than deal with actual one-on-one clients.”

“Since graduating in December, I started traveling while I continue building my business from my laptop. There are many perks to being an entrepreneur, but with it comes a load of stress and responsibility that you do not experience in a normal work environment,” said Emeigh.

Emeigh’s company, Blazing SEO, provides proxy servers all over the world to more than 3,000 clients. Optical character recognition (OCR) which is the mechanical or electronic conversion of images, captcha solving capabilities as well as other web-based services. Emeigh’s team of developers and system administrators create software to automate his proxy and hosting business. This includes automatic delivery of a customer’s servers and proxies after purchase, automatic termination of services, automatic server “health checks” and server help notifications.

Emeigh says, “Compared with other competitor’s in the proxy niche, no one else has the level of automation that I accomplish with my custom-coded scripts that automate virtually every part of the proxies’ management. Automation is key to my success. Whether it be script or software, build it right the first time, and let it work for you without paying someone to do the labor.”

When asked how his education prepared him, Emeigh said, “My knowledge from UNK has allowed me to know if a particular freelance developer has any idea what (s)he is doing and if (s)he’s a suitable candidate for the job.”

In offering words of advice to UNK students, Emeigh said, “What I would say to anyone considering being an entrepreneur is that 1) it’s not as glorious as it seems. Sure I can ‘work from anywhere in the world,’ but I also can’t clock out at 5 p.m. every day, and 2) you need to be able to manage people’s strengths and weaknesses, which means being sociable. I would be nowhere close to where I am today if I hadn’t figured out how to manage my developers.”

While Emeigh is just learning how to navigate his internet business, one who is quite familiar with it, because he has been around from the start, is Larry Peterson ’79, Ph.D.

“Dr. Peterson is a founding father of computer networks. He has received numerous prestigious awards for his work in this field. He is the author of the best-selling networking textbook Computer Networks: A Systems Approach. Around the world, when university students study computer networks, they learn from his textbook,” said Harms. “Yet, when you meet Dr. Peterson, you are awed by his humble and generous presence.”

Peterson grew up in Kearney where he first became interested in computers and programming through Kearney High School math class. They would use punch cards to complete basic math calculations. Those cards would be ran through the “computers” at what was then known as Kearney State College (KSC) twice a week where they then had to wait 1-2 weeks for output.
"It was typical introductory to computers, but it really whet my appetite for more," said Peterson. He went on to KSC to take broad-based mathematics and programming. At the time, it included a little bit of everything numerical from basic scientific applications to implementing company programs.

After earning his Bachelor of Science in Computer Science in 1979, Peterson began graduate school at Purdue University where he researched the internet and networking. He was exposed to the earliest software and helping Purdue connect to the internet. It was around that time the internet infrastructure took off. "As the internet went national and companies got on board, applications were continually being developed and used on the internet. However, the internet still had limitations and shortcomings. There needed to be a way to continue to work on solutions," said Peterson.

Peterson earned his M.S. and Ph.D. degrees in Computer Science from Purdue University in 1982 and 1985. He served as a professor at the University of Arizona and later as the Robert E. Kahn Professor of Computer Science at Princeton University, where he also served as Department Chair from 2003 to 2009.

While at Princeton, he co-founded a startup to commercialize CDN technology developed on PlanetLab. In March 2002, Peterson and David Culler, of UC Berkeley and Intel research, organized an "underground" meeting of researchers interested in planetary-scale network services and proposed PlanetLab, a company that was continually improving processes to improve the internet.

"The internet quickly became part of the national communication infrastructure that people and companies were using. You couldn't just take down the internet to work on it," Peterson said, "It is like trying to repair a road while you're driving on it. Our company would fix the internet on the fly. Improve it and repair it, while using it at the same time."

While PlanetLab has evolved and subsequently acquired by Akamai Technologies, Peterson felt it, "trained a generation of scientists that are working in the industry. Techniques we used, evolved and became important to businesses in the industry. We have people at all the big technological corporations: Comcast, AT&T, Google, etc. Our advances have to be fast enough to keep up with innovations such as Facebook and Google.

"Initially, when technology of the internet was introduced, computers were at the edge of society. We are seeing a dissemination of computers that allows for a global vantage point at multiple domains," said Peterson. "Originally computers were unique, expensive and hard to possess. They were more of a phenomenon. Today, computers are becoming cheap, identical and much more accessible."

He is now Emeritus at Princeton University and splits his time between the University of Arizona and his latest endeavor Open Networking Laboratory. That is Peterson's next adventure: open-source software, which is software that may be developed to study, change and distribute to anyone and for any purpose. Peterson's latest company is a non-profit for the sake of changing the industry and providing internet technologies to the masses. Peterson said, "In the industry, we say, 'Getting computers and the internet into the hands of the next billion.'"

While excited about the potential of wide-spread technology, Peterson offers some advice, "The explosion of software is exciting! There will always be risks with technology security and protecting data challenging persuasiveness of computing technology. People need to be educated about technology and understand how to run basic digital equipment."

"What has happened in my lifetime is a phenomenon. Kearney State College gave me a great grounding in basics of programming." Peterson said, "I received an education that has always served me well. It was practical in nature and not theoretical; and that, in education, is invaluable."

Peterson is the co-author (with Bruce Davie) of the networking textbook "Computer Networks: A Systems Approach." He has served as editor-in-chief of the Association for Computing Machinery (ACM) Transactions on Computer Systems, on the editorial board for the IEEE/ACM Transactions on Networking and the IEEE Journal on Select Areas in Communication, and program chair for SOSP, NSDI, and HotNets. He is an ACM Fellow, an IEEE Fellow, and a member of the National Academy of Engineering. He is also the recipient of the IEEE Kobayashi Award, the ACM SIGCOMM Award and in April of this year was inducted into the Nebraska Hall of Computing.

Even after all Peterson has done, he is excited about contributing more to the field of technology. Peterson says, "Computing technology is not on the edge of our society anymore, but imbedded into it. I'm anxious to see how far open-source software can go. It has game-changing caliber, and I'm going to take advantage of it."

When asked what message Peterson would tell CSIT UNK students today, he responded, "This is an exciting field. You shouldn't be predicting the future; you should be inventing it. This field is your opportunity to make the future yours and touch it for generations to come!"