Changing the World Through Creative Entrepreneurship

A PROFILE OF UNIVERSITY OF ILLINOIS
STUDENT-ENTREPRENEUR KALEV LEETARU

Kalev Leetaru is a young man with "ideas for everything" and the drive to bring those ideas into the real world. Since he entered the University of Illinois in the fall of 2000, Kalev's development of innovative technology solutions has earned him four pending patents and recognition in *Fortune* magazine.

"For as long as I can remember, I've been interested in creating things," said Kalev. "I have fond memories of waking up at three in the morning on Sundays and getting out my Legos to build elaborate worlds." His parents encouraged him. Kalev's world changed forever when his dad brought home a computer for the family.

Kalev's interest in creating had taken him from Legos to woodworking to electronics. The new computer sparked his interest in going beyond electronics to programming. "My dad had an old book of BASIC programs that performed various calculations relating to his work as a petroleum geologist," Kalev recalled. "I took the book and pulled bits and pieces from the programs, and then used them to make my own simple programs."

When Kalev was an eighth-grader, his parents bought him a "turtle robot"—a small, round hemisphere with two small wire arms and a keypad on the back that could be used to program the robot's actions. Kalev soon tired of the software that

Kalev Leetaru

came with his robot, so he wrote his own program that allowed him to control the robot from his personal computer.

He didn't know it at the time, but that simple program held the seeds of Kalev's first venture as an entrepreneur. His dad was writing Web pages for his work, and he recognized Kalev's robot program as a means to simplifying his own solutions. "He realized that if I replaced the robot commands in my program with HTML commands, I had a very nice HTML editing program," Kalev said. His dad showed the program to his colleagues, and interest in it grew rapidly.

Later the following summer, Kalev began writing a commercial-grade version of his program and working to make it into a strong product. In December 1996, Kalev and his father officially launched Gamacles Software, and Kalev was a real-life entrepreneur in the eighth grade.

Their first product allowed users to make their own Web pages, and Kalev expanded the suite over six versions. Anticipating the rise of the interactive Web, Kalev created a product called Gamacles Vision to let designers develop Web pages that changed their content in response to user actions. The pioneering product was recognized as setting the bar for the future of the interactive Web.

Always looking for the next solution, Kalev's programming took Gamacles Software into online image copyright protection, where there was tremendous commercial potential. Image Protect was introduced in late 1997; within a few months, sales had surpassed the Web page authoring suite, and it was sold in 1998. Kalev took Image Protect through twelve versions, and it set an industry standard before Gamacles Software closed in 2001.

When Kalev entered the University of Illinois as a National Merit Finalist in 2000, he was already doing research programming for the National Center for Supercomputing Applications Visualization and Virtual Environments Group. He had wanted to work there since the eighth grade when he visited the CAVE (Cave Automatic Virtual Environment) at the Beckman Institute for Advanced Science and Technology.

Access to the CAVE, and the stimulus for Kalev's first virtual reality application, didn't come until the summer of 2000. "Running applications in the CAVE was a very complicated affair, especially for nonexpert users," said Kalev. "I was challenged to develop a suite of tools to make CAVE applications more automated, and the EasyDemos suite was born."

Kalev's best-known CAVE application, named ShadowLight, was developed in 2001. "I wanted to build an application that allowed nontechnical people to enter the CAVE and sketch entire worlds in the space around them, using it as a perfectly fluid design environment. I wanted to make it possible for people to use the CAVE as a magical extension of real life." His first version of ShadowLight centered around his idea of a design program for virtual reality. In the university setting, Kalev's program was put to use by architecture professor Joy Malnar, who had her students design in the CAVE with ShadowLight.

Kalev learned from this cross-disciplinary experience, and the following summer, he pulled heavily from his observations of the architects using the application to create a second version, which was used for five semesters by Malnar's senior and graduate-level design studios. The easy-to-use application also attracted another professor on campus, Umesh Thakkar, who used the application for three semesters as part of an outreach program to a local middle school. Kalev's middle-school experience in the CAVE had now come full circle, as his program

helped a new generation learn from the possibilities of virtual reality. His application bridged another discipline when ShadowLight was installed at the University's art gallery in Chicago, ISPACE.

"Early on, I established myself as someone who likes to work with people from other disciplines, understand their needs, and find ways of creating solutions to those needs," said Kalev. "I want to look not only at ways computer science can shape history, I want to understand how history should shape new solutions in computer science."

Kalev graduated from the University of Illinois in December 2004, with a bachelor's degree in computer science. He has received numerous awards, including being the first freshman to be named University of Illinois Student Employee of the Year. He has been accepted to the Ph.D. program in the Graduate School of Library and Information Science at the University and continues to work on bringing technology solutions to the marketplace.

"The spirit of creation is at the heart of entrepreneurship," said Kalev. "But the biggest hurdle for entrepreneurs in general, and student entrepreneurs in particular, is the business savvy to know how to bring an idea to market and find the resources to actually do so. The university's initiative, supported by the Kauffman Foundation, to create classes to teach business skills and savvy to students from any discipline eliminates one of the largest hurdles for future entrepreneurs.

"I never have a shortage of ideas," said a smiling Kalev, "but I want to create products that are meaningful to people, that provide solutions to make their lives easier. I want my work to empower the unempowered."