

Badshah Shows a Genius Touch

BY SAMEER PANESAR *STAFF WRITER*

The 2,000 attendees of the Computer-Human Interaction (CHI) Conference in Vancouver, Canada, will get a break from the slew of papers presented by graying professors and post-graduate students: one from senior Akash Badshah, the first high school student to present a paper in the conference's twenty-eight year history.

Badshah will present a paper concerning a haptic, or touch-driven, feedback device on May 13. He will discuss a device he constructed this past summer before coming to Exeter as a postgraduate. "My project is called 'Interactive Generator' or 'InGen' for short," Badshah said. "It is a self-powered rotary device that provides haptic feedback." Familiar applications of such tactile technology include vibrations in a touchscreen or in a rumbling game controller, Badshah said.

Badshah's device, "a self-powered general purpose wireless controller capable of providing haptic feedback," is the first of its kind because it is extremely power efficient.

CHI, Badshah said, is the "premier annual conference in the field of computer-human interaction. Researchers from around the world submit their papers," he said.

Badshah will rub elbows with top scientists and engineers from research institutions and universities around the world. "Microsoft, Intel and Google all have strong presences at the conference," he said.

Badshah's paper was selected in the top one percent of papers submitted to the conference. "My paper was honored with the 'Best of CHI Award,'" Badshah said. The conference receives more than 3,000 papers each year, and Badshah's paper was among 14 others that received the award in 2011.

Gabe Cohn and Sidhant Gupta, graduate students at the University of Washington, worked with Badshah on the project. "Akash is a very talented student," Cohn said. "His project was very impressive." Shwetak Patel, a professor of Computer Science and Engineering at the University of Washington, oversaw his project. Patel, Cohn and Gupta will attend the conference with Badshah.

Badshah's work rivaled that of Ph.D. students, Cohn said. "Microsoft Research in Cambridge, UK, thought that he was a graduate student," Cohn said. "We didn't tell them that he was a high school student until after we submitted the paper."

Cohn worked with Badshah over the summer. "We didn't think he had the time to get the paper done," Cohn said. "We gave him a smaller scale project, and he finished it in a week so we asked him to make this into a complete project and research paper."

Gupta worked with Badshah on the project. “We were really impressed with Akash. I think he has immense research potential. I would compare him to a first year graduate student.”

Cohn considered Badshah’s project a success. “It’s this device that allows you to not only interact with a computer in a self-powered way but you get haptic feedback,” Cohn said. “There’s a lot of real world applications for this, possibly even in developing worlds.”

One possibility, Badshah said, would be to build it into a soil quality sensor. “It could give feedback on the quality of soil to someone who doesn’t have the education to understand the numbers a traditional sensor would give,” he said. “A village farmer could see the quality of their soil by feeling ‘hard or soft’ instead of reading the numbers. Haptic feedback is the most intuitive sense we have. There’s a very low education barrier for haptic feedback.”

Badshah said that computer-human interaction is a critical field for the future. “Computer-human interaction deals with how we bridge the gap between digital information and the physical world,” Badshah said.

The applications for Badshah’s invention are limited for the time being. “Currently, the device is optimized for media like the TV Guide and video games,” Badshah said.

He provided an example for its current use. “Imagine you’re scrolling through your TV Guide and you’re looking for a soccer game. You enter a query for soccer and every time you pass over a program that has something to do with soccer, the device gives you a short bump so you can feel something that’s related to soccer,” Badshah said.

“When you get to the end of the list it starts getting harder to turn so you know when you’re reaching the end of a list. It’s augmenting what you see on the screen and providing you with physical feedback. That can really enhance your use of the device.”