Hilldale recipient J.J. Wang develops paper keyboard for mobile devices
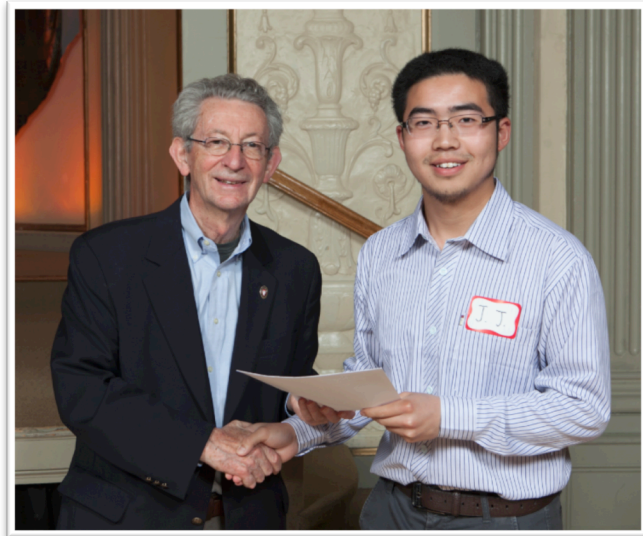
July 14, 2014 | by Bridget Jaekel

We've all felt the frustration that comes along with typing on a smartphone. A small screen and touchy keypad makes for noticeably slow typing speeds. J.J. Wang, a junior in the Computer Engineering program, and his mentor, Professor Xinyu Zhang, observed this problem and decided typing on a phone doesn't have to be so difficult. And so, the UbiK was born.

Zhang originally envisioned the idea and, when Wang started working as a student in his lab, they began to develop the technology behind the paper keyboard known as

J. J. Wang receives his 2013-2014 Hilldale Undergraduate Research Fellowship Award.

UbiK. After an exhausting process of trial-and-error, which Wang says was the most challenging part of his experience, they finally found success. The keyboard functions via an Android application. You print out an image of a keyboard—or draw a control pad on any kind of surface—and the app uses audio signals to detect what you are typing. This allows the user to type exactly as he or she would on a computer. It's almost like magic.

Wang says he is thankful for the resources that have been available to him through the university. His mentor, Professor Zhang, has been vital throughout the research process. And he pointed Wang to the opportunity that won him the 2013-2014 Hilldale Undergraduate/Faculty Research Fellowship. According to Wang, the Hilldale Fellowship award was essential for carrying out their research because they were able to purchase the phones and other materials they needed.

The impact that the Hilldale Fellowship award had on Wang is why he encourages other students to apply. It gave him the chance to complete his research, and that has led to even greater opportunities. The UbiK recently won an award in an Electrical and Computer Engineering department competition for the "best prototype." And in the summer of 2014, Wang and Professor Zhang will demonstrate their project at the International Conference on Mobile Systems, Applications, and Services in New Hampshire. The Hilldale Fellowship award, Wang says, was important to this success.

He encourages all students to get involved in some type of research.

"Through research, one really finds his or her potential. You see how fast you can learn and what you are really capable of doing," says Wang.

For Wang, the future is looking bright. He is currently working on some other projects with his mentor. They are in the very early stages of developing an application that would allow people who have extra data on their phone plan in a given month to sell it to others nearby. In December, Wang will graduate and is considering what his next steps will be. Sometime in the future, he says, he would love to develop technology that people will actually use.

To learn more about the UbiK paper keyboard read the paper *Wang co-authored with his mentor and other collaborators and check out* this video demo.