

# NOW THERE'S AN APP FOR THAT

By Greg Chandler



**K**urtis Cunningham takes a couple of classes at Hope every semester, hosts a weekly show on the college's radio station, WTHS, and loves singing, sports and country music. He is outgoing and has many friends on the Hope campus.

However, because of 27 missing genes in his genetic makeup, Kurtis has trouble with visual spatial relationships. His condition is called Williams' syndrome.

"He knows what he sees. He has no trouble seeing the 'what,' it's where it is in space that's difficult," says his mother, Erin.

Up until recently, Kurtis' condition made it difficult for him to get around to the places he wanted to go. But thanks to the efforts of students mentored by Dr. Michael Jipping of the computer science faculty, Kurtis now has an application, or "app," on his Android phone that allows him to use the Macatawa Area Express, the public transit system that serves the Holland-Zeeland area.

The app, "MAXTracks," provides step-by-step instructions for Kurtis, who is part of Ready for Life—a program housed at Hope that provides educational opportunities and living skills courses for people with disabilities—on how to get to the bus stop and at what stop he needs to exit the bus to reach his desired location. He regularly rides the MAX to visit his friends, as well as his favorite coffee shops and restaurants.

"The app helps me getting to the location on time. I don't want to be late for anything," Kurtis says.

"MAXTracks" was developed as part of a summer software development project last year by Hope students Kalli Crandell, a senior from Grand Ledge, Michigan; Victoria Gonda, a senior from Joliet, Illinois; and Cole Watson, a junior from Louisville, Colorado. However, the process that led to the app's development goes back two summers, when Dr. Jipping received a phone call from Erin Cunningham, whom he had not met before.

"From the beginning, we had the whole Ralph Waldo Emerson idea: go where there is no path and leave a trail," Erin said. "It's not uncommon for me to have ideas for things Kurtis could use that don't exist. I've never been afraid to call people and just say, 'Hey, can you help us out? How can we make this work? Is this possible?'"

Initially, Dr. Jipping didn't have a solution to Kurtis' dilemma. But as time passed and he started to think about a project for his students in the Hope Software Institute program, an idea began to take shape.

"The summer before, we had put together

a new initiative to write a big project to teach students software engineering techniques," Dr. Jipping said. "I thought this would be an interesting idea: to come up with an application using those techniques."

So Dr. Jipping called Erin Cunningham back, and the two soon met to try to come up with a plan. It wasn't long before the three student researchers became involved in the process.

"We talked about what things would be helpful for Kurt, what things might be difficult, and the overall goal for what we wanted the app to do," Victoria Gonda said. "We found that it would be best to have two sides of the app, one that Kurt uses for his navigation and another for his helpers to set things up for him. We wanted it to be intuitive for both types of users."

Collecting the information to develop the app was a fairly time-consuming process. The student researchers spent a lot of time riding the MAX so they could map out all the bus stops Kurtis might use.

"They had to track every GPS location for every single stop on all the routes," Erin Cunningham said.

As the summer went on, Kurtis tested out the app as he rode on the MAX and provided feedback to the students to try to help them improve the app.

"We went on group trips with the client so that we could observe first-hand how the app was being used, and if we were on the right track with some of our designs," Kalli Crandell said.

## THE APP DEVELOPED BY A TEAM OF HOPE STUDENTS HAS MADE A MAJOR DIFFERENCE FOR HOLLAND, MICHIGAN, RESIDENT KURTIS CUNNINGHAM, WHO BECAUSE OF WILLIAMS' SYNDROME HAS TROUBLE WITH SPACE-TIME RELATIONSHIPS.

Along the way, Dr. Jipping says the student researchers learned valuable lessons that they would never have learned in a classroom setting.

"We learned how to write software, we learned how to debug efficiently, but we also learned how to test, and we learned how to interact with someone that works with software differently than we do," Dr. Jipping said.

"The students did all the registration with



The college's signature emphases on providing meaningful collaborative learning experiences and being of service melded in development of the app "MAXTracks," a project mentored by Dr. Mike Jipping of the computer science faculty. Pictured from left to right are senior Victoria Gonda, Dr. Michael Jipping, junior Cole Watson and senior Kalli Crandell.

Google, they put it up in the Google Store, they put the updates up. They did all the work." The app is currently restricted in the Google Store, but the restriction is expected to be removed soon so that anyone can use it. Meanwhile, students who were part of the Hope Software Institute this summer worked with Dr. Jipping on developing an app that can be used on Apple's iPhones. That app could be available in the iTunes Store this fall, Dr. Jipping said.

MAX marketing and customer service manager Beth Higgs said the app that the Hope students developed is the first of its kind that she's come across. She says she's aware of applications that some visually-impaired riders of the system use, but that this was the first to help riders who have cognitive issues such as Kurtis'. Roughly one of every three MAX users has a disability that's been verified under the Americans With Disabilities Act.

"That's so great for the students, to see what the app does in real time," Higgs said.

Dr. Jipping hopes that future Hope students will have similar opportunities to get real-world experience in developing software. He has been contacted by several people about developing additional applications. "We want to write service-oriented apps, assistive-technology apps," he said.

The students' experiences in working on "MAXTracks" are already paying dividends. For example, Kalli Crandell credits the project with helping her get an internship this summer

at Open Systems Technologies, a Grand Rapids, Michigan-based software developer.

"I am beyond excited to get to spend the summer working alongside such awesome developers," Crandell said. "I completely credit this opportunity to my research experience."

Victoria Gonda is also hopeful about landing a position in the software field after she graduates from Hope next year.

"I learned about what it is like to develop in an agile development environment, how to design in respect to someone else's ideas, and how to carry a larger project from start to finish," she said.

Dr. Jipping says Hope's financial commitment to undergraduate research has made the work of the Software Institute possible. He is seeking additional funding, perhaps through outside grants, to provide even more opportunities for students to get involved in this kind of assistive software.

"It changes our curriculum to focus on using business and outside community sources to drive how we teach our students," Dr. Jipping said.

Meanwhile, Erin Cunningham marvels at the work the Hope developers put into developing the app for her son, and is thankful for their efforts to continually work with Kurtis to make the app—and his life—better.

"They just did an amazing job," she said. 🐾