Is There *an* App for That?

Rochester faculty put new technology at your fingertips.

By Kathleen McGarvey

THE INNOVATIVE WORK OF SOME ROCHESTER RESEARCHERS IS ONLY as far away as your fingertips. Faculty in several disciplines are creating mobile applications for smartphones and tablets as a way to explore important aspects of the digital age—as well as to address social, medical, and clinical issues and demonstrate the artistic potential of the technology.

Here are a few recent examples:

'Human Cloud': VizWiz

FIRST DEVELOPED BY JEFFREY BIGHAM, ASSISTANT PROFESSOR OF COMPUTER science, and colleagues in 2010, the iPhone application aims to help people who are visually impaired to recruit sighted volunteers to aid them with visual problems—such as identifying text labels, icons, and colors—in nearly real-time. VizWiz users take a picture with their phone, speak a question, and then receive multiple spoken answers. Bigham calls the app a "tool to explore human-backed access technology—the idea that access technology would be more reliable and useful if humans could back up fragile (but fast and cheap) automatic approaches."

The environment we live in usually assumes our ability to see, and tasks that are simple for the sighted—being sure clothing matches before a job interview, finding an empty picnic table at the park—become cumbersome when a person can't take in information at a glance. That's where digital culture can step in, says Bigham. "With social networks like Facebook and Twitter, and everyone connected at all times on their mobile devices, the human cloud is ready and waiting. We just need to figure out how to harness it to do useful work." VizWiz, he hopes, is one step in that direction.

Since it was first released in May 2011, more than 5,000 users have asked over 50,000 questions through the system. They received an answer in less than a minute, on average.

'Mining Patterns': Germ Tracker

UNDERSTANDING HOW DISEASES SPREAD IS AN ONGOING, urgent pursuit for public health—but traditional data collection is slow and limited. That's where an innovation like Adam Sadilek's Germ Tracker can step in. Sadilek, a postdoctoral fellow in computer science, and collaborators released the app this fall. Germ Tracker follows tweets to identify locations where people are sick. The results of the data analysis show up on a national map, with each tweet marked in colors from red to green, denoting the spectrum from sick to healthy.

"We have an automated model that goes through the tweets, 'reads' them and decides if the person is sick. It looks at the tweet in the entire context of the sentence, not keywords. It has about 2 million features it considers for any given sentence. Based on the evaluation

VIEWPORT: Lauren Blair '13 displays a route through downtown Rochester mapped with an app developed by Leila Nadir, lecturer in sustainability studies, and Cary Peppermint, assistant professor of art, that's designed to encourage people to engage with the environment.

ADAM FENSTER

of this giant checklist, it decides what is the probability of sickness," Sadilek says of the app, which is in test-release.

When used on a mobile device, Germ Tracker uses GPS to indicate where a user is located when tweeting. "People struggle with modeling how epidemics grow, and how people infect each other. And there's not enough data with this kind of granularity," says Sadilek. "When a person comes to the hospital, you don't know who he's met, what bus he has ridden. This kind of app fills in some of the blanks, so you can begin to reason about the spread of epidemics. It builds on a giant iceberg of research that we've done before on mining patterns in social media."

Twitter users stand in as representatives of the general population. Already, the app has begun to show that users riding the subway are more likely to get sick than those who don't. Eating at restaurants seems to be another factor for transmission.

The model is about 90 percent accurate—and because the algorithm gains more information as it is used, the database will become more accurate as it is accessed more often.

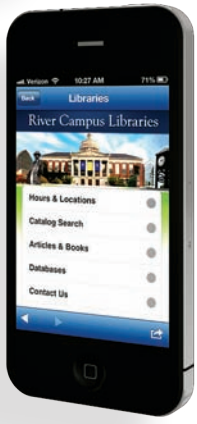
'Field Notes': Indeterminate Hikes+

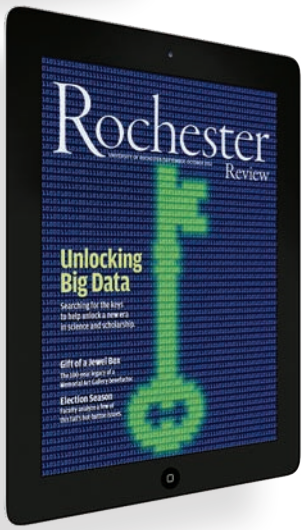
DEVELOPED BY LEILA NADIR, LECTURER IN SUSTAINABILITY studies, and Cary Peppermint, assistant professor of art, Indeterminate Hikes+ guides users on walks through any landscape using Google Maps, with prompts and activities along the way that encourage participants to engage with their environments and see wilderness within urban spaces. The app is available for download on iPhones and Android phones.

Using the app involves entering a start- and endpoint for a hike, much like obtaining Internet directions. But instead of selecting a direct route, Indeterminate Hikes+ generates a random path with various stops and specific actions during the course of a hike. While following a route through the heart of a city, a suburb, or the countryside, users may be asked to take photographs at designated points, write "field notes" on their phones, send a text message to someone, or perform a particular task—all in response to the surroundings. By prompting participants to slow down, observe, and interact with nature, Nadir and Peppermint intend for the app to stimulate thoughts about how nature is defined, how humans affect ecosystems, and how media can mediate and improve the relationship of people to the natural world.

"Everyone speeds through cities so fast," Peppermint says. "We want to rethink that, and use technology"—which usually speeds us up—"to slow us down." You don't need to "unplug," he adds, to connect with nature; mobile technologies can actually be used to reconnect with place.

After users complete their hikes, they can upload them to ecoarttech.org—Nadir and Peppermint's website—so that others can view their route, photos, and notes. Indeterminate Hikes+ can be downloaded for free at ecoarttech.org. R





Seizing the App-ortunities

Apps are also playing a role in how people interact with the University. Some examples:

MAGart

A free app for smartphones and iPads, MAGart features works from the Memorial Art Gallery's Ancient World, Asia, and Medieval and Renaissance Europe collections. Users can explore artworks, follow a tour, and choose works by culture, date, or even title. Grant Holcomb, director of the gallery, also discusses his favorite pieces in the collection as part of the app. App-guided tours are available by subject matter, time period, and time available for touring. A version for Android platforms is planned for 2013.

UR Mobile

Designed for the University, UR Mobile is a free suite of apps and sites that give access to the latest information about Rochester. The app includes directory information, campus building locations, updates from Yellowjacket athletics, and other information.

URMC MDtips

A new app created by Yousaf Ali, chief documentation officer for the Medical Center, aims to demystify medical documentation. The tool—which doctors can easily carry in their pockets—supplies quick tips to help heath care providers paint a more precise picture of the condition of the patients they treat, and the quality of care they extend. The app is an extension of a series of booklets on the topic that Ali, associate professor of medicine, earlier published to aid better documentation.

News

Rochester Review is available as an iPad app now, and *Eastman Notes* will follow in 2013. Futurity, a University-based site that features research news from top universities in the United States, Canada, the United Kingdom, and Australia, is available as an iPhone app.

—Kathleen McGarvey