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Intriguing ideas from two young researchers

By Mike Langberg
Mercury News

What if we could have a single device, the size of a pack of playing cards, that would act as a cell phone, car key, iPod, garage door opener, credit card and TV remote?

Or how about jumping from one Web page to another just by gazing directly at the link on screen, then pushing a button on the keyboard?

These are the two most intriguing ideas I encountered Monday at a conference called New Paradigms for Using Computers, held every year at IBM's Almaden Research Center in the hills above South San Jose.

The conference, which this year drew a crowd of about 250 academics and other deep thinkers, is always several years ahead of the real world.

Most of the daylong event was devoted to speeches delivered in a big auditorium. This year's speakers chewed over a familiar theme: The Internet changes everything.

The real excitement was out in the hallway, where graduate students and younger researchers set up tables and posters to present their visions of the future.

John Varghese, a 35-year-old manager at IBM's engineering services group in Burlingame, had prepared a detailed description of an all-in-one device he called ``Lil'me,'' as in ``Little Me.''

Lil'me would be wireless, with a color screen and wireless ear buds that pop out of the unit's back when needed. There would also be flash memory for data storage and a powerful processor.

For starters, Lil'me would be a voice and video phone. It would also be a music player that retrieves new music without being connected to a computer, and could be programmed to open any compatible electronic lock on cars, homes or offices.

Using built-in global positioning system, Lil'me could help its owner navigate. If accidentally dropped or lost, Lil'me could transmit its location until found.

Lil'me could also store credit-card information, and would transmit that information wirelessly to cash registers. The device would even deliver instructions, such as telling a gas pump whether your car needs regular or premium gasoline.

At home, Lil'me would be a remote control for TVs and other home entertainment equipment.

Lil'me would use fingerprints, voice prints or scanning of the retina to verify that it is in the possession of its owner, reducing the risk of identity theft.

Most of the technology required for Lil'me exists today. Already, cell phones have morphed from handling just voice calls to supporting text messages, e-mail, Web browsing and shooting photos.

Varghese, with the optimism common at these conferences, believes devices such as Lil'me will be available within two years.

Manu Kumar, a 31-year-old graduate student in computer science at Stanford University, was demonstrating a concept Monday he called Gaze-enhanced User Interface Design, or GUIDe.

Sitting me down in front of a special computer monitor with a built-in camera, Kumar ran a very brief training session where I followed a yellow dot around the screen with my eyes -- somewhat like eye exams that test peripheral vision.

After completing this calibration, I could look at a spot on the screen, push a button on the keyboard, and a magnified view of that small section would pop up. Looking at a link in the magnified area and releasing the button, the Web browser would jump to the page I'd selected with my eyes.

``My hypothesis is that it will be easier and faster than using a mouse,'' Kumar said of his eye-tracking research. After my brief test, I'm inclined to agree.

The mouse would still be necessary for complex tasks such as drawing lines on the screen, but Kumar believes eye-tracking could substitute for routine duty such as Web browsing and switching between applications.

Eye tracking is already used in research, such as figuring out what parts of a photograph people look at first, and to assist the disabled. But these systems are expensive and difficult to operate.

Kumar believes GUIDe wouldn't require any more training than the two minutes I needed. A pair of Webcams, selling today for about $100 each, would be the only extra hardware required.

There's no guarantee, of course, that either of these ideas will go anywhere. But I'd be grateful to give my wrists a rest after many years of pushing around a mouse, fumbling for my car keys and fishing credit cards from my wallet.

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