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PITTSBURGH TRIBUNE-REVIEW

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CMU scientists improving computers' people skills

By [Michael Yeomans](#)

TRIBUNE-REVIEW

Tuesday, October 22, 2002

Alexander Waibel is scornful of today's desktop computers and dreams of the day when keyboards are obsolete.

His vision and the vision of others who study at the Interactive Systems Laboratories within the School of Computer Science at Carnegie Mellon University, is for computers to anticipate human needs and serve those needs.

"If we want to build computers better, they have to understand the way people communicate," he said.

CMU hosted 150 experts in human/computer interaction last week in the third "International Conference on Multimodal Interfaces."

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During the conference, the CMU scientists and their students demonstrated some of the technologies they are developing with an eye toward moving their ideas from the laboratory to the marketplace.

Some of the projects include using personal digital assistants — like the ubiquitous

Palm Pilot hand-held computer — that can be adapted to control household appliances. Others can be configured with tiny cameras that capture pictures of words on signs written in foreign languages — in this

Photo Gallery

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[A mobile language translator](#)

Keith Hodan/Tribune-Review

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[Brad Myers and Jeff Nichols](#)

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case encribed with Chinese characters — which are then instantaneously translated.

"It's natural to bring together people from different fields, like speech recognition, vision tracking and artificial intelligence to build interfaces that improve the interaction between humans and their environment," Waible said.

The entrepreneurial bug has infected his researchers. And Waible himself has started two companies around the innovations from his department.

Jack Mostow would like nothing better than for his company to be the next Carnegie Learning Inc. That Pittsburgh company, formed by CMU researchers, devised intelligent tutors for mathematics and is selling its software and tutorials to schools nationwide.

Mostow's research centers on developing software reading tutors that adapt CMU's Sphinx-II speech recognition engine to analyze the speech of children. The program intervenes when a student mispronounces words and helps them to understand the words' meaning in context.

The graduate students in professor Brad Myers' lab are enthused about the possibility of someday marketing the technology they're developing to transform everyday electronic devices like cell phones or personal digital assistants into universal remote controls for all household appliances.

Myers, whose research is partly underwritten by the Pittsburgh Digital Greenhouse, a state-financed effort to drive so-called "system-on-a-chip" technology, has already sold his software. It allows multiple users to simultaneously annotate Microsoft PowerPoint slide show demonstrations, and allows a presenter to see thumbnail previews of his slides, allowing him to jump back and forth and to view lecture notes related to the slides.

For Jie Yang, new technology can make life easier in a global economy. His sign translation device uses a personal digital assistant to take a snapshot of common road signs or signs that perhaps indicate danger ahead, but can't be read by tourists and other non-native inhabitants. The device recognizes the words, or characters, and spits out a translation.

Micah Alpern devised a system that allows a driver or passenger in a car to use hand signals to change radio stations or CDs using pull-down menus projected onto the windshield. Alpern said the system is reminiscent of technology imagined in the Tom Cruise movie "Minority Report." Alpern said vehicles of the future will incorporate many of the types of technologies being tested at CMU and other universities around the country.

General Motors Corp. has supported Alpern's graduate-level research.

Even in the collaborative environment fostered at the Interactive Systems Laboratories, competitive juices flow.

Another student dismissed the hand-signalling technology for use in selecting music in favor of a speech-recognition system that allows the user to make song selections based either on song titles or artists.

"It's more natural to talk than to be a conductor," he said.

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