

Vestec makes it easier for machines to understand people

November 06, 2009

BY ROSE SIMONE, RECORD STAFF

WATERLOO – “How can I help you today?” the female voice asks in a pleasant tone. “Briefly explain why you are calling. Here are a few examples of what you might say: Pay my bill. Talk to a representative”

Automated voice systems are now so familiar to anyone calling a large telecommunications company like Rogers that people have come to take such spoken interactions with machines for granted.



Mathew McCarthy, Record staff
Fakhri Karray, co-founder of Vestec Inc., says the Waterloo company's software provides an accurate, affordable solution for companies that need to incorporate speech recognition into their telephone systems.

But in fact, getting a machine to understand human speech is a complex and gargantuan task, says Fakhri Karray, co-founder and chair of Vestec Inc., a Waterloo company that has developed software modules that makes it easier and cheaper for companies to set up automated voice systems that can understand human speech.

Understanding speech is difficult for machines because each person has his or her own accent and speech peculiarities, as well as a tendency to slur words together. Even a simple instruction such as “pay bill,” can come out sounding more like “piebail.”

Although the human brain is a master at putting sounds into context and making sense of even garbled words, a company like Rogers spends millions of dollars and collects tens of millions of utterances in order to train its system to understand human speech, Karray explains. Most mid-sized and smaller companies don't have the money or the ability to do this, he adds.

But now, with Vestec's technology, speech recognition is about to become better and more affordable, so that even the telephone systems at smaller companies can have the power to understand callers, he says.

Vestec, a University of Waterloo spinoff that was formed in 2003 and now has 14 full-

time employees, recently announced a partnership with Digium, the company that makes Asterisk, an open-source software-based telephone exchange system that connects phone lines within a company and to the outside world.

Vestec will provide a low priced but full-featured and powerful speech recognition engine for the Asterisk system. This will greatly expand the penetration of voice recognition systems because many mid-sized and smaller companies already are using Asterisk, Karray says.

"The solution that Vestec is providing is an inexpensive solution that is still powerful in terms of its recognition. We contacted Digium and showed them our solution and they jumped on it and said they wanted to work with us."

Vestec also has attracted the interest of large Fortune 500 companies that want to use another one of the company's product, a natural language understanding engine that Karray says enhances the power of their voice recognition systems and does it in a lower way.

"Vestec provides the modules to make a smart interface that sits between the existing speech engines and the telephony systems of these large companies. We have done some tests with one of the largest banking systems in the United Kingdom, and they were ecstatic about it," Karray says.

Co-founder Kashif Kahn says big telecommunications, banking, insurance, utilities and travel companies that already have voice recognition are interested in improving the performance of their systems because they are offering their customers a wider range of products and services, which means the volume and the complexity of customer service calls is growing.

"By using our technology, they can improve the routing accuracy and performance of speech applications while also reducing their costs," says Kahn, Vestec's vice-president of business development.

The Vestec tools come out of artificial intelligence research work done at UW, where Karray is an electrical and computer engineering professor.

Researchers there have been working in an area known as "soft computing" to model and simulate in software what the human brain does naturally, as it comprehends what is being said in different environments and according to the context of what is said. This is a huge leap forward from the traditional approach to automatic speech recognition, which just tries to match the audio signal to the words, without regard to the spoken context.

"We have access to an outstanding team of research scientists and software engineers from the University of Waterloo who have worked with us over the past several years," Karray says.

Telephone systems are not the only application for these tools.

There is huge potential in the automotive sector, where car makers are building voice interfaces into their vehicles so that people can use their voices to interact with different systems in the car or make a call without taking their hands off the steering wheel or eyes off the road.

There are also numerous other "self-service" possibilities for voice recognition in areas, such as banking where the human voice might interact with a computer server in order to pay a gas bill from a particular account, for example, Karray says.

Houses in the future will have lights or appliances that can be wirelessly controlled with voice commands, Karray adds.

Another big market would be systems to help seniors and disabled people, as well as people in nursing homes and hospitals. Karray imagines a future in which a senior citizen or disabled person can use voice commands to instruct a robot to bring something to them from a counter.

Science fiction writers have long imagined talking computers. From 2001: A Space Odyssey, featuring Hal the talking computer, to Star Trek: Next Generation, where humans routinely chat with their space ship's computer, many futurists have conceived of a future when humans and machines can talk to each other naturally.

That level of sophistication is still far off, but "we are trying to push the boundaries of the technology," Karray says.

rsimone@therecord.com

Original Article: <http://news.therecord.com/Business/article/625270>