

MIT promises us the sensitive computer ...

Boston

Computers will probably be able to sense human emotions in the near future, revolutionizing the relationship between humans and machines, a symposium sponsored by the Massachusetts Institute of Technology's (MIT) Media Laboratory heard last week.

Charles Vest, president of MIT, told the audience of about 1,000 — which included representatives from Ford, General Motors, IBM, Microsoft and Xerox — that “we’ll see a melding of the biological and physical worlds. Our machines are about to recognize our faces and talk back to us.”

Nicholas Negroponte, director of the laboratory, said that — as with many Media Lab projects — work on this goal is still at an early stage. “Everybody here is urged to be at the edge,” he said, pursuing research that “may or may not work out.”

But Marvin Minsky, an artificial intelligence pioneer based at the Media Lab, maintained that computers are still primitive. “Computers lack common sense,” he said. “Although computers started about 50 years ago, as far as I’m concerned they’re still just starting.”

The biggest problem with computers, said *Wall Street Journal* columnist Walter Mossberg, who hosted the day-long event, is that “we’ve tried to make people conform to stupid ways of doing things. We need to make our computers human-literate, rather than making us computer-literate.”

Rosalind Picard, head of the Media Lab’s Affective Computing group, suggested that computer designers have “completely left emotion out of the equation”. She added: “We need a balance in computing, and emotion is one piece of the picture.”

Picard and her colleagues have developed ‘emotionally supportive agents’ to ease frustration among computer users. Once a computer senses that a user is becoming aggravated — using a camera and pattern-recognition technology to analyse facial expressions, by evaluating the sounds (or screams) a person makes, by gauging how hard a person squeezes the mouse, or by measuring skin conductivity, heart rate, pulse and other physiological variables — an autonomous software ‘agent’ can offer assistance, encouragement or comfort.

In one experiment, people using computers with an ‘empathic’ agent spent more time on their machines and were more satisfied than those without.

A computer developed at the Media Lab can now recognize certain emotions with about 80 per cent accuracy, once a ‘signal’ for sentiments such as anger, grief, hate, love and joy has been determined — based, in part, on actors’ depictions.

Picard admitted that this only works

for a limited number of emotions. “But I don’t think it will take us 50 years to recognize emotions across the board, even though it took that long for speech recognition technology to become ‘speaker independent’.”

A different use of this technology, on display at the symposium, is in new forms of artistic expression. In one demonstration, a dancer wore shoes fitted with sensors that converted his steps into music. In another, Media Lab graduate student Teresa Marrin demonstrated the ‘Conductor’s Jacket’ equipped with motion sensors that enabled her to adjust musical output through arm gestures.

Commenting on the two approaches, David Durlach, president of Boston-based TechnoFrolics, noted that “it is infinitely easier to elicit emotional responses in humans with machines than it is to get machines to respond appropriately to human emotions.

“I don’t have to understand everything about emotions to evoke feelings in people,” said Durlach, who creates interactive, computer-controlled sculptures. “I can tell from people’s expressions whether it works.” On the other hand, “getting a computer to understand emotions by explicitly coding all the cues is incredibly complex and, if done poorly, could be annoying or boring.”

Such an approach, he said, is probably doomed to failure. “But an adaptable system that learns about emotions over time — in much the same way a child does — could allow rich interactions between



Curious or confused? These spectacles, developed at Media Lab, can help monitor the emotions revealed by a furrowed brow.

humans and intelligent machines.”

Few at the meeting questioned the value of emotionally savvy computers. But a cautionary note was raised by Jamie Hsu of the General Motors Corporation, who asked whether overemphasis on human-machine interactions might have a negative effect on interactions between humans.

Computers are already changing how people behave, especially children, said Hsu. “I just want to make sure that when computers become sensible 30 to 50 years from now, humans also stay sensible.”

Steve Nadis

... and may look to Ireland for expansion

London

The Irish government and the Massachusetts Institute of Technology (MIT) are near to closing a deal that would create a \$200 million research and teaching centre for information technology in Dublin, the first outpost of the US institutes Media Lab.

Securing a major new European research centre would be a coup for the Irish government. According to a government spokesperson, it has been investing heavily in educational technology in schools and colleges over the past few years to bring Ireland from the “third division to the premier division” in

information technology.

The spokesperson confirms that negotiations have taken place over the past few months between the Irish Department of Education and Science and the MIT Media Lab, and describes these as “a recognition of where this country is going”.

The country’s four universities are expected to be involved in the deal, although no decisions have been taken on how the interaction with them will work. Reports suggest that the new centre will focus on Internet applications, particularly e-commerce and technology in education, as well as providing research and business ‘incubation’. A number of MIT research staff would

be expected to move to the centre, which would house up to 300 students, mostly postgraduates.

It is believed that the government has been asked for a commitment of \$40 million towards the project. Its input will be balanced against its expectation that the centre will attract new industry to the country, particularly high-technology companies. Government officials are also said to be hoping that the centre will help ensure continued growth in the economy by meeting technology skills shortages. The Media Lab has declined to comment on the reports.

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