Researchers Tweak Roomba to Respond to Emotions

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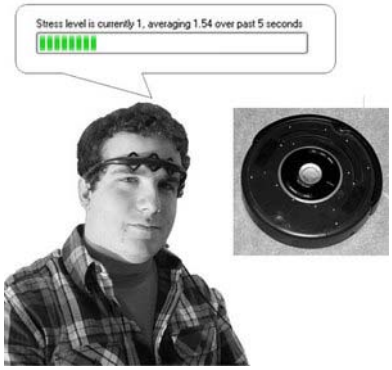

Researchers at the University of Calgary tricked out an iRobot Roomba vacuum cleaner to react to signals such as muscle tension and eye movement in a bid to test limited brain-computer interaction between humans and robots.

"As far as we know we are amongst the very first to pursue bioelectric signal interfaces in human-robot interaction, where we program a robot to react to the user's emotional state rather than just direct control," says Paul Saulnier, a graduate student at the University. Saulnier presented his findings as a paper at the Human Robot Interaction conference in San Diego earlier this month.

Saulnier and his team used NIA, a gaming peripheral from OCZ that reads bioelectrical signals from gamers and translates it into on-screen actions. For instance, gamers who wear the NIA (neural impulse actuator) headband can use some basic thoughts and eye movements to control a video game.

The team mapped NIA to the Roomba and used indicators such as muscle tension to control robot speed. The more tense a muscle, the greater the indication of stress, which in turn acts a signal for the Roomba to back off. (Read the complete paper)

The idea is to prove that mapping the emotional state of a user to the emotional state of a robot is possible with existing technology, say the researchers.

"People have often asked me about the potential real-world applications of this," says Saulnier. "The example I like to use is an emotion-sensing robot could that could be used to monitor the health of an elderly relative and react if something is detected of concern."

While it may be an interesting idea, there are technical challenges currently, says Saulnier. But it is something the team hopes to investigate next.

Photo: Paul Saulnier/University of Calgary

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