Brain Scanner Customizes Web Surfing for You

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Brain activity could serve as a useful method for filtering out unnecessary Internet information. LARRY MULVEHILL/CORBIS

With the amount of worldwide data generated each minute, logging onto the Internet these days can leave a person feeling buried alive in a nonstop avalanche of digital information. But a new wearable system being developed by computer scientists at Tufts University, could alleviate that.

It's a headband and Web interface that scans your brain to figure out your preferences and then only shows you relevant content, while preventing a user from going down the dreaded Internet wormhole. With such a device, a Pandora radio station would naturally adapt to an individual's preferences without the user having to push any buttons or click on anything. And it could also help prioritize what users view online and improve work efficiency by delivering the right information at the right time.


“If you give people the wrong information at the wrong time, it increases their stress, their anxiety, decreases the satisfaction and decreases their productivity,” Evan Peck, a computer science doctoral candidate in Tufts Human-Computer Interaction Lab [http://hci.cs.tufts.edu/], told Discovery News. “We have to deal with this somehow.”

Along with fellow doctoral candidate Daniel Afergen, Peck and HCI Lab director Robert Jacob recently co-authored a study suggesting that measuring brain activity can serve as a useful method for filtering out unnecessary information.

Peck and his team asked study participants to wear headbands fitted with two functional near-infrared spectroscopy (fNIRS) probes that measured activity in the prefrontal cortex, a region of the brain that plays a critical role in emotion and reasoning behind decision-making. Each person was given a list of films culled from IMDB’s lineup of best movies [http://www.imdb.com/chart/top] and the 100 worst movies [http://www.imdb.com/chart/bottom] and asked to pick the top and bottom three movies. The participants were then shown slides of each selection, while the fNIRS probes measured the person’s neural patterns that correlated with preference and opposition.

“We try to get an idea of what the patterns in the brain look like for things they like or don’t like,” said Peck.

Preference patterns were then fed into a brain-computer recommendation system -- a series of filters and machine learning algorithms -- that interpreted those patterns to make recommendations as subjects watched a fresh series of movie slides. Researchers compared this test against a second trial -- a no-input control -- where all subjects watched an identical list of average-rated movies with simulated recommendations.

Not only did the brain recommendation system provide higher-rated movies than the control condition, but it actually provided better recommendations over time. These results were expected, especially against a no-recommendation control, but researchers say the big take-away was that their brain-sensing system added preference data to the c

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