

Audi, MIT Develop Road Frustration Index

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Sections: Car Safety

Road rage gets the best of us all from time to time. Now Audi and MIT have developed the Road Frustration Index to tell us more about how that road rage affects us.

According to the press release from Audi, the automaker hooked up with MIT's SENSEable City Laboratory to study "a wide range of measurements aimed at quantifying driver stress on the road today.



(Photo courtesy BadSandy.com)

"For Audi, the research helps validate how the latest driver assistance and connectivity technologies found in most Audi models can help ease the stress of daily driving," the release said.

Dubbed the Road Frustration Index (RFI), the aim is to hone in on individual things that lead to drivers' frustration. In theory, this will allow Audi to work toward solutions that will minimize those things and make driving more enjoyable.

"This new methodology quantifies and contextualizes driver stress and frustration using skin conductance sensors, facial/body tracking, and environmental recordings," the release said. "Findings were compared with a variety of other activities – such as taking a test or engaging in adventure sports – to make the overall methodology and results more relatable."

MIT SENSEable City Laboratory Project Leader Kael Greco said, "In addition to daily driving conditions, we are measuring stress levels under a variety of daily activities: at home, in the office, while having breakfast or attending a lecture at MIT. We found that certain driving situations can be one of the most stressful activities in our lives."

Audi of America Director of Product Management Filip Brabec said, "The data we received is fascinating. One study showed that getting side swiped by an oncoming car can be almost as stressful as jumping out of a plane. By working with MIT to identify stress points for drivers, Audi is able to anticipate the needs for future mobility. Audi has worked with MIT on other projects as part of a strategy to develop new technology and approaches with leading universities to better understand the conditions that lead to driver stress, and subsequently, to driver enjoyment."

In order to come up with an algorithm for the index, MIT had to program a series of experiments to measure stress and frustration encountered during real-world driving scenarios. They used physiological sensors and "an array of face/body tracking technologies," the release said, including "GPS to track the subject's location and speed; cameras to monitor both the subject's facial response and external driving environment; a modified Microsoft Kinect sensor to track the subject's body movements; and skin conductance sensors to monitor the subject's stress responses."

The release said the Index preliminary trials took place in Boston over a 12-month period covering roadways from bustling highways to suburban side streets and driving conditions from stop-and-go traffic patterns to “confusing roadway navigation.” To ensure more accurate results, the researchers validated their observations by having drivers fill out questionnaires after the trials and assigned each driver’s reactions a score based on video recordings of the trials.

MIT Professor Carlo Ratti said, “Cities, blanketed with networks and digital devices, are developing new forms of intelligence. The same is happening inside our cars, which are increasingly filled with different kinds of connected sensors. From the intersection of these two trends will emerge tomorrow’s mobility systems– starting from the next generation of autonomous vehicles.”

The results of the study will be published in a peer-reviewed journal later this year, Audi said. In the meantime, more information about the Road Frustration Index can be found at <http://senseable.mit.edu/rfi/>.