# How are you feeling? Ask your computer mouse!

## How businesses can use the data that users generate while interacting with technology to improve the user experience and even detect fraud.

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What does your computer mouse say about you? Most of us are aware of how tech *outputs*,

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like bad website design, can put us in a bad mood. Yet, are we also aware of how tech *inputs*, like our own particular mouse-cursor movements, can provide real-time indicators of our emotional state to the computer?

Detecting *negative* emotions via users' own digital movements is something that my colleagues and I have been researching. Through several experiments, we suggest how such information can be used by organizations in valuable ways — from designing better websites to detecting fraud. That's right, a seemingly minor movement of a mouse, or a moment's hesitation when filling out an online form, can actually raise a red flag that a user may be trying to commit fraud — ratted out by his own mouse!

This article digs into my research on trace data — the digital footprints that users leave while interacting with technology — and shows how businesses can use such data, both to improve the user experience (UX) as well as to prevent erroneous inputs (whether accidentally or on purpose), thereby reducing costs and boosting profitability and satisfaction. Let's click through to explore more.

## Wearing your heart on your screen

From computer mice to touchscreens and scrolling on your mobile phone: we interact with technology using our fine motor skills, acquired during childhood and hardwired to our brains. Neurological research has shown how negative emotional states can reduce the brain's processing capacity, influencing reaction times, muscle force and, ultimately, task performance.

Because past research had shown that frustration can drive away online consumers, my co-authors and I decided to explore whether and how we could detect signals of frustration, with the aim of helping website owners create smooth experiences. Given that negative emotional states (such as frustration) influence fine motor control, we speculated that this would influence how users interacted with the computer through input devices, such as the computer mouse. Given the ease with which mouse-cursor movements can be recorded during online interactions, could we detect frustration by analyzing the distance and speed of the cursor's movement?

Most online goal-directed tasks — like searching for information, paying a bill or proceeding through checkout — are structured and linear. The user moves the mouse-cursor from point A to point B. We proposed that a user under the influence of negative emotions would be prone to make more deviations from the most efficient path between two points on a

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webpage, i.e., a straight-line trajectory. We also hypothesized that mouse-cursor speed would be slower than normal. To test this, we conducted three studies.

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