Identification of user confusion in a web application

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“Confusion is a situation in which people are uncertain about what to do or are unable to understand something clearly.”

Goal
Predict user confusion in real time for web applications based on logged mouse interaction data

Eyetracking user study
- 6 tasks at FiroTour travel agency’s portal
- 59 participants
- confusion was logged with a software button (exclamation mark) situated in the right top corner of the screen
- 95 out of 354 tasks with button press

Results
- 99% precision on not confused data (real time)
- 40% precision on confused data (real time)
- 94% precision on not confused data (prediction after session)
- 40% precision on confused data (prediction after session)

We compared logistic regression, random forest and multilayer perceptron classifier.

YesElf
Our method is part of an ongoing commercial project YesElf. We implemented a production ready module able to predict the confusion in real time. Hundreds of YesElf’s customers can use our solution daily.

Mouse features
- Horizontal velocity
- Vertical velocity
- Velocity
- Acceleration
- Distance
- Jerk
- Num. of movements

Mouse movements
Extracted features
velocity, acceleration, distance, duration, jerk, ...

Histogram representation of features

Confusion classifier

If user confused, show guides