Cognitive Task Analysis for Phishing Prevention

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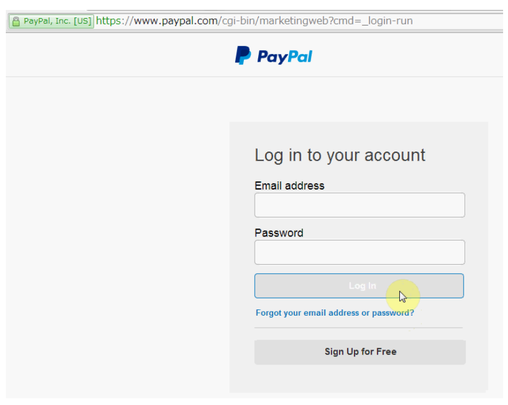
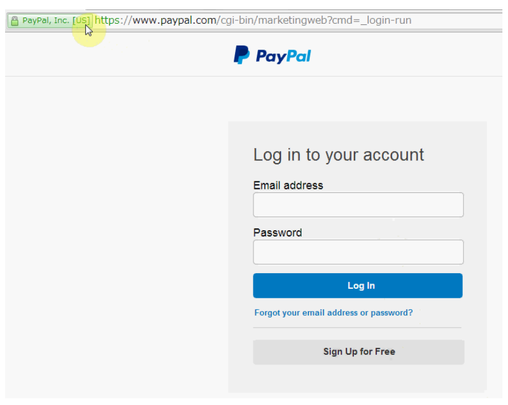
Motivation

Better understanding of users' internal mental activities
makes better cyberdefense for users

EyeBit

EyeBit system enforces phishing prevention habits. It deactivates all web input forms until a user checks the address bar in the web browser.





Question: Did users really see the bar with intent to check URL and SSL indicators?

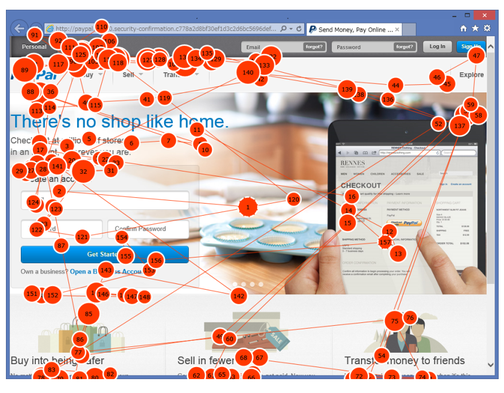
Eye-tracking approach

Eye-movements during identifying phishing websites are different among users.

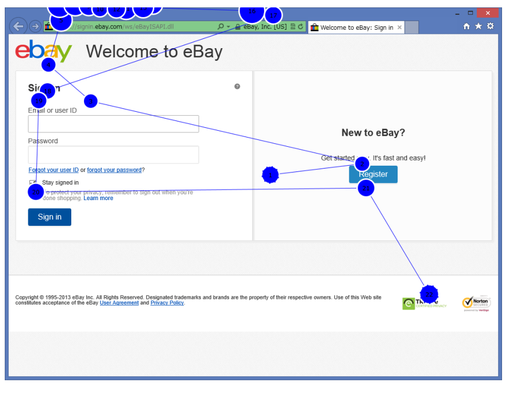
Experts – see the address bar to check URL and SSL indicators.

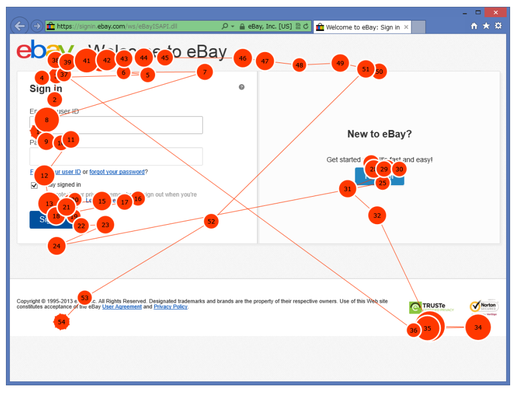
Novices – receive strong signal from only web content

(Experts)



(Novices)





Cognitive Tasks Analysis

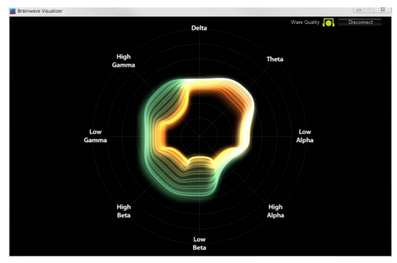
Users implicit intention can be classified into several patterns.

- Navigational: human's idea to find any object in visual input without a particular motivation
- Informational: human's aspiration to find a particular object of interest or to behave with a motivation.

Phase 1: Explanation with eye-tracker
- Number of Fixations
- Duration of Fixation

Phase 2: Explanation with other cognitive tasks analysis

Eye Tracking



EEG

seeing

thinking

heart-beating

breathing

Blood Pressure,
Skin conductance…

Respiratory

NECOMA