

Research Assistant Behavioral Authentication

“Semi-supervised study application”

Background

Passwords are used for securing computer systems for a long time. Although they are still many times the only protection, people (re-)use short and weak passwords for their own accounts that can easily be guessed or may be revealed by big identity leaks. Apart from possession-based mechanisms like hardware tokens or access cards, behavioral biometrics are usable to verify claimed identities of persons, too and could provide a higher security and usability. Typical examples are the verification by the way a person walks (gait), by the way a person types on a keyboard or touchscreen (keystroke/touchstroke) or by routines based on the browsed webpages, app interaction, or visited locations. A crucial part within that research is the conduction of user experiments to sample behavior and collect the data for later analysis, especially using Android smartphones

Problem

Over the time, many frameworks were created to have a convenient access to the sensors and APIs provided by Android to not implement it again every time. While this already helps a lot, any researcher usually has to develop specific experiment procedures on top, e.g. different tasks or UIs to, for instance, simulate some real-world situations like chatting with someone or browsing a web page. In the context of one of my research works I evaluated the integration of other questionnaire-based frameworks to allow an easy “configuration-based” provision of these procedures without implementing these UIs every time that seemed promising and was also used in a master project successfully. In this context, it also revealed several potential and to-dos that are not yet realized.

Goal

As a research assistant, you should improve the current prototype:

- Evaluate frameworks to integrate sensor and API access on mobile phones
- Evaluate frameworks to define experiment procedures and reuse existing
- Come up with an approach to further abstract the experiment-procedure definition from the real implementation of the procedure’s components
- Create a nice open source version of this new experiment-recording app ;)

Contact

Eric Klieme
eric.klieme@hpi.de
H1.18
0331 5509-559