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 ;)

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