Internet Technologies and Systems
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Behavioral Authentication

Background

Passwords are used for securing computer systems for a long time. Nevertheless, people use short and weak passwords for their own accounts[1]. One of the reasons is that humans are not good in memorizing long random strings. To solve this problem, the Identity Management Lab of HPI is developing a system that does not rely on password but on human behavior, such as gait recognition. Our system in its current version can detect the gait of the user and determine the trust level, a probability that the user is also the owner. This trust level is send to an identity provider (IDP) and forwarded to services for authentication.

Problem

The current system focuses on the smartphone and gait recognition. To enhance the accuracy of our solution, other smart devices in the user's environment should be considered, e.g. smartwatch. These devices have a lot of built-in sensors that can be used to detect and recognize users. Each device computes their own trust level and share it with the smartphone.

Goal

In this master project, we look at the smartwatch and the typing behavior. The goals of this project are:

- Record data from available sensors e.g. accelerometer, gyroscope, microphone with our existing application
- Recognize the typing motion in general (Is the user typing?)
- Classify the typing data (Is the currently typing user the owner?)
- Compute a trust level from the classification result

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[1] https://hpi.de/news/jahrgaenge/2016/hpi-wissenschaftler-ermitteln-die-zehn-meistgenutzten-deutschsprachigen-passwoerter.html