Defense of a Doctoral Dissertation

Authentication Usability Methodology

by

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For the Ph.D. degree in Computer Science and Engineering

Nowadays many systems require end users to authenticate themselves. Authentication is one of the security activities that end users perform the most. Thus, the usability of this security feature plays a major role in the proper utilization and adoption of a novel authentication method.

This dissertation presents coauthentication, a novel authentication system. Many authentication methods and protocols exist, but passwords remain the predominant authentication method used. Coauthentication is presented here in detail in several possible variations and their associated protocols, with performance comparisons.

This dissertation also presents a framework to evaluate authentication methods in terms of usability. A large body of literature pertaining to the usability of computer systems is available; however, comparing the usability of authentication methods remains difficult due to the different techniques available. Several usability methodologies are reviewed as well as several overall comparison tools used to compare authentication methods.

A study of 43 participants, following the framework presented, evaluates coauthentication against passwords on two different entry devices, a laptop and a smartphone, and against fingerprints on a smartphone.

The study results provide a promising framework for comparing usability of authentication techniques.

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