UNIVERSITY OF SOUTH FLORIDA

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.

Examining Committee

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Publications

1) A Dual-Task Interference Game-Based Experimental Framework for Comparing the Usability of Authentication Methods. **Jean-Baptiste Subils**, Joseph Perez, Peiwei Liu, Shamaria Engram, Cagri Cetin, Dmitry Goldgof, Natalie Ebner, Daniela Oliveira, and Jay Ligatti. Proceedings of the 12th IEEE International Conference on Human System Interaction (HSI), June, 2019
2) Collaborative Authentication: Protocols, Evaluations, and Applications. Cagri Cetin, Shamaria Engram, **Jean-Baptiste Subils**, Dmitry Goldgof, and Jay Ligatti. Submitted toACM Transactions onPrivacyand Security (TOPS)
3) Coauthentication. Jay Ligatti, Cagri Cetin, Shamaria Engram, **Jean-Baptiste Subils**, and Dmitry Goldgof. Proceedings of the ACM Symposium on Applied Computing, April, 2019
4) System and Methods for Authentication using Multiple Devices. Jay Ligatti, Dmitry Goldgof, Cagri Cetin, **Jean-Baptiste Subils**. US Patent 9,659,160. May 2017
5) Systems and Methods for Anonymous Authentication using Multiple Devices. Jay Ligatti, Dmitry Goldgof, Cagri Cetin, **Jean-Baptiste Subils**. US Patent 9,380,058. June 2016

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