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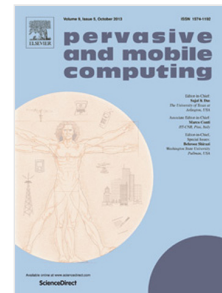
Ahmed Mahfouz, Ildar Muslukhov, Konstantin Beznosov

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Android Users in the Wild: Their Authentication and Usage Behavior

Ahmed Mahfouz^{a,b}, Ildar Muslukhov^a, Konstantin Beznosov^a

^a*Department of Electrical and Computer Engineering, The University of British Columbia, 2332 Main Mall, Vancouver, B.C. Canada V6T 1Z4*

^b*Computer Science Department, Minia University, El-Minia, Egypt 61519*

Abstract

In this paper, we performed a longitudinal field study with 41 participants, who installed our monitoring framework on their Android smartphones and ran it for at least 20 days. We examined how unlocking mechanisms perform in the wild in terms of time it takes to authenticate and error-rate, and how the users' choices of the unlocking mechanisms are linked to the different patterns of smartphone usage. Based on our findings, we offer insights into improving Android unlocking mechanisms and related user experience.

Keywords: Smartphone Authentication, unlocking mechanisms, Smartphone usage, Usability, Measurement

1. Introduction

Smartphones have become ubiquitous personal devices, widely used by a very broad and diverse population, from teenagers, to students, to business users, to senior citizens. Due to this diversity of users as well as smartphones' inherit customizability and extensibility, the patterns of their usage vary widely. Yet, one trait is more and more common for all these users: the smartphones are becoming very personal devices that store a plethora of sensitive personal information and serve as gateways to many online services, from e-mail, to banking, to social media, to online dating. Unsurprisingly, unauthorized access to the device is the highest security risk for smartphone users [1, 2, 3].

Email addresses: ahmedmahfouz@ece.ubc.ca (Ahmed Mahfouz),
ildarm@ece.ubc.ca (Ildar Muslukhov), beznosov@ece.ubc.ca (Konstantin Beznosov)

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