

ABSTRACT

THESIS: Mobile User Authentication with Smart Device Sensor Data

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DEGREE: Master of Science

COLLEGE: Science and Humanities

DATE: December 2016

PAGES: 43

Millions of smart mobile devices are being used every day and more are coming on the way. Smart mobile devices often contain important information such as personal information, credit cards and so on. Thus, it is important to make sure that only authenticated access to the devices should be allowed. Some common mobile device authentication approaches include password, PIN, figure swipe and fingerprint but all of them require users to input something for the authentication, which is bothering or inconvenient because the devices are used many time a day. Also, sometimes they struggle from unlocking devices during driving or wearing gloves.

In this thesis research, I propose a smart mobile device authentication without requiring users' input by exploiting multiple sensors available in every smart device today. After learning the owner's pattern of gesturing a device, the device will authenticate a user by observing his or her gesture in dealing with the device. The user's gesture will be learned on the sensors' data of a device, e.g. accelerometer (*speed*), gyroscope (*yaw, roll, pitch*). The learning and authentication will be conducted by a machine learning algorithm—Hidden Markov Model (HMM). The input of the HMM model will be the sensed gesture data and the output will be the authentication decision.