

UNIVERSITY OF TARTU  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE  
Institute of Computer Science

ENNO ELLER

# Simplifying Mobile Social Media Authentication On Android

Bachelor Thesis (6 EAP)

*Supervisor: Huber Raul Flores Macario, M.Sc*  
*Co-supervisor: Satish Narayana Srirama, Ph.D*

**Author:..... "....." May 2015**

**Supervisor:..... "....." May 2015**

**Professor:..... "....." May 2015**

TARTU, 2015

## **Abstract**

Smartphones are very common nowadays and people all around the world are using them in their everyday life. Even though mobile phones were originally invented as calling devices, smartphones allow the user to communicate in different ways including social media, which as of January 2014, 74% of online adults use. In case they own a smartphone, they probably use social media on it as well, but with restrictions that come with the size of the device, affecting how we view content and also type. Typing on smartphones can be frustrating, but more so when the keyboard size prevents us from succeeding with authentication and we have to type the same text numerous times. This paper proposes a solution to such occurrences by using pattern recognition rather than typing. Patterns allow the screen to be used more efficiently, giving the user more room for accuracy errors. Survey results indicate that approaching authentication in this way is feasible.

# Contents

<b>List of Figures</b>	<b>v</b>
<b>1 Introduction</b>	<b>3</b>
1.1 Introduction . . . . .	3
1.1.1 Motivation . . . . .	3
1.1.2 Contributions . . . . .	3
1.1.3 Outline . . . . .	3
<b>2 State of the Art</b>	<b>5</b>
2.1 Automating Authentication Process . . . . .	5
2.1.1 Service providers . . . . .	5
2.1.1.1 Google Identity Platform . . . . .	5
2.1.1.2 Facebook SDK . . . . .	6
2.1.2 Internal applicatoin coding . . . . .	6
2.1.2.1 Android AccountManager . . . . .	6
2.2 Summary . . . . .	6
<b>3 Problem Statement</b>	<b>7</b>
3.1 Research Question . . . . .	7
3.2 Summary . . . . .	7
<b>4 Your Contribution</b>	<b>9</b>
4.1 Your Brilliant Ideas ... . . . .	9
4.2 Summary . . . . .	9

## CONTENTS

---

<b>5</b>	<b>Case Studies</b>	<b>11</b>
5.1	Case of Study... . . . . .	11
5.2	Summary . . . . .	11
<b>6</b>	<b>Conclusions</b>	<b>13</b>
<b>7</b>	<b>Related Work</b>	<b>15</b>
<b>8</b>	<b>Future Research Directions</b>	<b>17</b>
<b>9</b>	<b>Sisukokkuvõte</b>	<b>19</b>
	<b>Bibliography</b>	<b>21</b>

# List of Figures

## LIST OF FIGURES

---

## Acknowledgements

I would like to acknowledge ...

## LIST OF FIGURES

---



# 1

## Introduction

### 1.1 Introduction

Briefly summarize the question (you will be stating the question in detail later), and perhaps give an overview of your main results. (it is not just a description of the contents of each section)

#### 1.1.1 Motivation

Some of the reasons why it is a worthwhile question.

#### 1.1.2 Contributions

Solution developed - (e.g. algorithm, tools, etc.)

#### 1.1.3 Outline

Brief introduction of each chapter

## 1. INTRODUCTION

---

## 2

# State of the Art

### 2.1 Automating Authentication Process

Automating Authentication process in this context refers to automating or simplifying the process of authenticating the user accessing the phone or features on the phone. This section discusses some of the tools used on android to automate authentication.

#### 2.1.1 Service providers

Nowadays social media websites with lots of users are providing developers the option to let users authenticate by using accounts on the social media websites. Users do not have to create new accounts to these sites, but will refer to their already existing accounts on social media as a way of registration. On android the user needs to have that social media applicatoin installed and logged in to use this method. The most known two providers are Google and Facebook.

##### 2.1.1.1 Google Identity Platform

Google is providing android developers with an application programming interface (API) which allows users to authenticate using Google account, but also allows developers to integrate other Google services into their applications: payments via Google Wallet, sharing with Google+, saving files to Drive, etc.

## 2. STATE OF THE ART

---

### 2.1.1.2 Facebook SDK

Facebook has a software development kit (SDK) for android developers. Just as with Google API, the SDK allows authentication via Facebook account and also provides more services - sharing on Facebook, sending application invites via Facebook, etc.

### 2.1.2 Internal applicatoin coding

Android SDK includes many ways for storing data in android smartphones internally. Developers can code the application to store credentials in an internal database, applications private preferences file or even in a plain text document. On application startup they will check if anything is present in a selected source and continue authentication if so.

#### 2.1.2.1 Android AccountManager

Another route is to use android built in centralized registry. This registry can hold user credentials or even authentication tokens which are generated via application server on the first authentication. Though it may require implementing authenticator for application specific details for validating account credentials and storing account information. For example Google, Facebook, and Microsoft Exchange each have their own authenticator.

## 2.2 Summary

Using 3rd party accounts as means for authentication is viable in many situations, but it also requires accounts on these sites, which makes the application bound to theirs. Writing your own code for simplifying authentication does not bound the application to anyone, at the same time could mean more work on the coding.

## 3

# Problem Statement

Transition - Since the establishment of SyncML by the Open Handset Alliance (OHA); the synchronization of data is the adopted approach for supplying cloud resources to the handset...

### 3.1 Research Question

Engineering theses tend to refer to a problem to be solved where other disciplines talk in terms of a question to be answered. In either case, this section has three main parts: 1. a concise statement of the question that your thesis tackles 2. justification, by direct reference to section 3, that your question is previously unanswered 3. discussion of why it is worthwhile to answer this question.

### 3.2 Summary

To counter the problems with the interoperability across multiple clouds, to perform data-intensive processing invocation from the handset and to introduce the platform independence feature for the mobile cloud applications, the following thesis discusses a Mobile Cloud Middleware (MCM) (? ). The middleware provides a unique interface for mobile connection and multiple internal interfaces and adapters, which manage the connection and communication between different clouds. The MCM capabilities for managing the resource intensive tasks can easily be envisioned in several scenarios which are discussed in further sections as case of study.

### 3. PROBLEM STATEMENT

---

## 4

# Your Contribution

Transition - Several are the issues that were discussed in previous chapter, regarding the use of cloud services from the mobile...

### 4.1 Your Brilliant Ideas ...

This part of the thesis is much more free-form. It may have one or several sections and subsections. But it all has only one purpose: to convince the examiners that you answered the question or solved the problem that you set for yourself in Section 4. Here, you have to present. Your brilliant idea(s), description, mathematical model that support your idea(s), analysis of the solution (e.g. performance, scalability, etc.)

### 4.2 Summary

Summarize the chapter with at least two paragraphs.

#### 4. YOUR CONTRIBUTION

---



# 5

## Case Studies

Transition - The development of mobile applications that requires data-intensive processing and at the same time that keeps a tolerable interaction with the user, its feasible though the use...

### 5.1 Case of Study...

### 5.2 Summary

Summarize the chapter with at least two paragraphs.

## 5. CASE STUDIES

---

## 6

# Conclusions

Summarize your work and results.

## 6. CONCLUSIONS

---

## 7

# Related Work

Compare your solution with existing projects. How your solution is better than the others?, why to use your solution?, etc.

## 7. RELATED WORK

---

8

## Future Research Directions

Briefly indicate how your current research can be extended, some improvements, etc.

## 8. FUTURE RESEARCH DIRECTIONS

---



## 9

# Sisukokkuvõte

Eesti abstract...

## 9. SISUKOKKUVÕTE

---

Cloud Services from Mobiles, in: The 9th International Conference on Advances in Mobile Computing & Multimedia (MoMM-2011), ACM, 2011, pp. 87–95.

# Bibliography

- [1] H. Flores, S. N. Srirama, C. Paniagua, A Generic Middleware Framework for Handling Process Intensive Hybrid