**MSc. in Computing**

**Practicum Approval Form**

# Section 1: Student Details

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| Project Title: | Security and Privacy of mobile Health(mHealth) |
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| Chosen major: | Security and Forensics |
| Supervisor | Renaat Verbruggen |
| Date of Submission |  |

# Section 2: About your Practicum

Please answer all questions below. Please pay special attention to the word counts in all cases.

**What is the topic of your proposed practicum? (100 words)**

The objective of this paper is, first we examine how mHealth applications and devices work under current regulations such as HIPAA, and GDPR. We evaluate the privacy and security requirements according to those regulations. Then we will discuss and give some possible solutions for following issues. 1. Security of communication between other mHealth device, application, or cloud. 2. Data storage and processing them. 3. Clear Explanation for data usage. 4. User errors. Lastly, we will utilize blockchain to investigate whether it is applicable for mHealth and possible can solve issues above

**Please provide details of the papers you have read on this topic (details of 5 papers** expected).

1. A Taxonomy of mHealth Apps -- Security and Privacy Concerns

<https://ieeexplore.ieee.org/document/7070200>

1. Blockchain as an enabler for public mHealth solutions in South Africa

<https://ieeexplore.ieee.org/document/8102404>

1. Are mHealth Apps Secure? A Case Study

<https://ieeexplore.ieee.org/document/8377881/figures#figures>

1. Security of mobile health (mHealth) systems

<https://ieeexplore.ieee.org/document/7367689>

1. Security analysis of a mHealth app in Android: Problems and solutions

<https://ieeexplore.ieee.org/document/8210757>   
  
**How does your proposal relate to existing work on this topic described in these papers?** (200 words)

MHealth has gain remarkable role in medical care in a past decade as the share of smartphones skyrockets. At the same time, its security and privacy considerations are still not properly addressed due to rapid growth. Most of the papers point out that current security of mHealth apps is not well organized by legislations, and Confidentiality and Integrity are the most questioned issues in hand. As for Confidentiality, mHealth system needs to ensure the information about patients or user must stay inside of authorized party. With regards to Integrity, it needs to ensure that data is not modified by third party and data is sent by authorized party. The reason why many papers mention about these problems is that most of the communication of mHealth is not encrypted or securely transmitted. In addition, the method of storing users’ data is not regulated and there is quire weak security system implemented in many apps in question. As the solution of these issues, few papers suggested that blockchain is the possible solution for all of the above as it is for other IOT issues.

What are the research questions that you will attempt to answer? (200 words)

As for the topic, my foremost question that I will try to answer is that “Is the communication of the mHealth Application safe?” “is Blockchain structure applicable to mHealth and give possible solution”

Besides that, here is the list of small questions that I will attempt to answer

How are mHealth apps working under current regulations like General Data Protection Regulation (GDPR), Health Insurance Portability and Accountability Act (HIPAA)

What are the general current issues and possible issues in future and solutions?

Is communication among (sensor, cloud), devices, and app secured?

Are communications amongst mHealth using Bluetooth safe?

How will you explore these questions? (Please address the following points. Note that three or four sentences on each will suffice.)   
  
- What software and programming environment will you use?

We will use Wireshark for analysing traffic and packets of devices and applications. If the messages are encrypted or not

- What coding/development will you do?

Language Java. Environment: Eclipse, Docker and Docker-Compose, Gradle or Maven, Linux command line   
- What data will be used for your investigations?

No dataset, however, we will pick mHealth application to work with (or possibly develop easy application.) We use data inside of those apps  
- Is this data currently available, it not, where will it come from?

We must choose affordable and applicable mHealth app  
- What experiments do you expect to run?

Develop Blockchain structure and evaluate how it will affect on mHealth  
- What output do you expect to gather?

Evidence of securing applications  
- How will the results be evaluated?

Referring to the European and American regulation about personal data, we will examine if it is meeting the requirements