Chapter 1

Introduction

- Smartphones everywhere
  - Everyone has one
  - Interchangeable with PC
- Sensitive data
  - Lots of traffic
  - Personal data stored
- Comparable to IoT
  - Hardware similarities
  - Security features (lot less than PC)

Smartphones are everywhere, being used for more and more sensitive data. Hacking into these devices should be made as hard as hacking into someone's personal computer because for many those two have become interchangeable.

1.1 Problem statement

- IoT security
  - Minimize overhead
- PC functionality
  - Banking, e-Health and mails
- Missmatch
  - Sensitive data requires good security
  - Functionality is pushed but security lags behind

The hardware in smartphones is comparable to that of IoT devices, it is more powerfull in many occasions but the design principles are often the same. The problem with this is that IoT devices are not very secure, smartphones are in that sense lagging behind on security compared to how they are used (banking, health and identification applications).

1.2 Contributions

- Reproduction of paper
  - Replicated solution as closely as possible
  - Evaluation about results compared to original
- Open source code (proof of concept)
  - Enable easier reproduction/verification in the future
- Extra experiment measurements
  - Comparable experiments (to be able to compare)
  - More elaborate experiments (to allow better decision making)
- Comparison with similar solutions
  - Overview of comparable papers (pros and cons)
  - Weak points and strenghts of the reproduced paper compared to the others

Major producers of smartphone chips are adding hardware support for security (Intel SGX, ARM TrustZone). The focus of this thesis lies in using ARM TrustZone to achieve a secure open platform from a smartphone equiped with ARM TrustZone.

1.3 Outline

In the next chapter more background information about among other things ARM TrustZone and Remote Attestation will be given. In the third chapter the methods secure applications will be explained. In the fourth chapter the goal and outcome of the experiments will be made clear. The final chapter will conclude this thesis informing the reader about limitations of this work and possible future directions of research.