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Security in a embedded system with performance contraints

A Goal Document for a Master’s Thesis Work

By

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1. Introduction

Technology advancement in…

Today Axis have two self-developed hardware platforms which the current products are running on. These platforms have high performance and are developed mainly for video. They are therefore not optimal for products not having these high performance requirements.

Axis is interested in developing a new hardware platform where price and power consumption are two important aspects. At the same time the platform needs to be secure.

1. Background and Motivation

Recent research in this area…

This Maters's thesis work will not include building any hardware, it will instead use existing microcontrollers to investigate different security aspects.

To find a secure solution to small hardware platforms is a very up-to-date matter since the growth of Internet of Things (IoT). As more devices gets connected to the Internet, the importance of security grows. Today's society relies on these connected devices and it is only getting larger.

1. Project Aims and Main Challenges

The aim with this Master’s thesis work is to… To find a feasible solution to these questions is challenging…

The aim with this Maters's thesis work is to investigate how to maintain the security in a embedded system with performance contraints. The work will consider the following:

* Different kinds of encryption
* Hardware- versus software-encryption
* Benefit of hardware accelerated encryption
* Algorithm's strength
* Known backdoors and attacks through IoT
* Performance measurements, latency, bandwidth e.t.c.

1. Approach and Methodology

The thesis project will be based on…

The main work will be made at Axis in the department “New Business” were the Master’s thesis students will have a personal workspace. Axis is responsible for all the hardware and software needed.

1. Previous work

Back-ground knowledge and experiences can be found among the professors and PhD students at the department… Basic knowledge in this area can be found in [1][2]…

http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=5940923&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxpls%2Fabs\_all.jsp%3Farnumber%3D5940923

1. Advancements and Outcome

Verification of the theoretical knowledge will be shown by real-world experiments… A scientific conference paper can be expected…

The outcome of the Master’s thesis will be presenteted in a scientific conference paper containing description and result of the different investigations. It will also be possible to se som real-world result from the final hardware platform.

1. Resources

PC or Linux based workstations, placed in thesis workers rooms, will be available for simulation and implementation.

Linux based workstations, hardware platforms (microcontrollers), software.

This goal document is approved by:

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| Main Supervisor  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Pe Ni |  | Examiner  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Pi An |