Bachelor and Master Project / Bachelor- und Masterarbeit

Threshold Method for Detecting Hardware Trojans

Introduction: Every year, the number of connected devices is increasing steadily. These devices work together in several cyber-physical systems such as vehicles, airplanes, clinical devices, etc. and especially embedded devices connected to the internet so-called internet of things (IoT). This quick increase and development drive companies to work with different supply chains to fabricate their integrated circuits in order to reduce production costs. Any foundries in these supply chains can easily affect the reliability and security of the manufactured integrated circuits. Recently, several forms of Hardware Trojan (HT) attacks have been proposed and investigated. HTs are purposely inserted to modify the circuitry of an integrated circuit. HTs are considered as one of the most powerful attacks against integrated circuits. To protect the contemporary systems and increase their security against HTs, a very efficient method to detect HTs is required.

In this work, a threshold method is proposed to predict the behavior of a given system. Recently, such a method is presented as very promising tools to detect HTs inserted in integrated circuits. Therefore, the target of this project is to develop an efficient threshold algorithm for detecting HTs inserted in System-on-Chip (SoC).

Research Objectives: The work plan contains four steps as follow:

1) Studying and reviewing the published HT insertion/detection methods for chips in the IoT.
2) Studying and modifying threshold algorithms for later use.
3) Devising a Threshold-based HT detection method.
4) Implementing the designed method and compare it with the state-of-art methods for detecting HTs instated in IoT chips.

Applications of the research results:
Developing a threshold-based HT detection method for chips in the IoT.

Prerequisites/Requirements: Students should have good background in algorithms, and they should be interested in hardware-implementations. Programming languages are also required.

Starting Date: To be agreed on with the interested party.

Interested students are kindly asked to contact:

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