Manual for the PUF performance evaluation program

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Research Center for Information Security (RCIS)

1. Introduction

This document is a user manual for the PUF performance evaluation program (released by RCIS, AIST). The program is based on the following paper.

Y. Hori, T. Yoshida, T. Katashita, and A. Satoh, “Quantitative and Statistical Performance Evaluation of Arbiter Physical Unclonable Functions on FPGAs,” Proc. ReConFig2010, pp.298-303, 2010.

You can download the program from the following website.

http://staff.aist.go.jp/akashi.satoh/SASEBO/ja/puf/index.html

The following table provides details about the MATLAB files.

MATLAB file	Description
example1_GetPufPerformance.m	Computes the intra-chip device performance (Randomness, Steadiness, Correctness and Diffuseness). Calls a function named GetPufPerformance.
example2_InterDiff.m	Computes the inter-chip device performance (Uniqueness). It is necessary to calculate the intra-chip device performance by running 'example1_GetPufPerformance.m' first.
GetPufPerformance.m	Computes the intra-chip device performance.
entropy2.m	Computes the entropy. Calls a function named 'min_entropy' or 'Shannon_entropy'.
entropy2_min.m	Computes 'min_entropy'.
entropy2_shannon.m	Computes 'Shannon_entropy'.

2. Program operation instructions

1) Download the program and the dataset from the URL provided above.
2) Decompress the downloaded archive.
3) Run MATLAB. Once the MATLAB command window appears, move to the directory where the decompressed archive resides or search for the files in the relevant directory.
4) Run the file named 'example1_GetPufPerformance.m'. Select the program directory in the directory browser dialog.
5) Run the file named 'example2_InterDiff.m'. Select the program directory in the directory browser dialog.

[Technical support]
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