Introduction to Hardware Security

Assignment 4

Due Date: August 27, 2022 (11:59 PM)

General Instructions:

- This will be a group assignment. Every group consists of five members. The allocated group numbers are uploaded separately.
- Only electronic submissions will be accepted.
- Late submissions will have penalties.
- Any sort of plagiarism will be penalised. If you are referring to any materials online or books, please cite them accordingly otherwise it will be considered as plagiarism.
- Please submit a detailed report explaining how you have solved the assignment.

Question

In this assignment, each group will be provided with 10K CRPs for Arbiter-PUF implemented on three different FPGA devices(Boards). Using these CRPs you have to calculate the Uniqueness, Reliability, and Uniformity of the 64-bit Arbiter-PUF. To calculate Uniqueness and Uniformity, 10k CRPs of board1, board2, and board3 will be used. Uniqueness will be calculated for the following cases:

- Uniqueness for: $(Board1, Board2)$
- Uniqueness for: $(Board1, Board3)$
- Uniqueness for: $(Board2, Board3)$

And Uniformity will be calculated for individual FPGA boards (Board1, Board2, and Board3).
The Reliability of the PUF has to be calculated for a particular FPGA board e.g., Board3. To calculate reliability each group is provided with 15 sets of 10k CRPs for Board3.

Deliverables:

1. Even though you are working in group, you need to submit solutions individually.
2. The solution for the assignment should be submitted as a zip file. The file should be named as StudentNameRollNumber.zip.
3. The submission should contain the following:
    - A python file.
    - The report (as pdf).