THE SECURE HARDWARE VERTICALLY-INTEGRATED PROJECTS (VIP) TEAM

TEAM TITLE: Secure Hardware VIP Team

GOALS: To design digital hardware which is highly resistant to (i) reverse engineering, and (ii) attack by malicious hardware insertions (hardware Trojans).

TECHNOLOGIES: Digital design, FPGA programming, encryption, VLSI design, digital systems test, complexity theory, lattice theory and hardware/software codesign.

RESEARCH ISSUES: Redesign of the logic structure of hardware to resist reverse engineering; hardware Trojan impact at run-time; design of block cyphers for encryption and decryption; duplication of digital logic in a non-obvious manner; mathematical proofs of algorithmic complexity.

TEAM ADVISOR: Vincent Mooney (ECE)

PROJECT PARTNERS & SPONSORS: Nanyang Technological University (Singapore) and Intel Corporation.

DESIRE DISCIPLINES & PREPARATION:
EE, CmpE – Background/interest in digital design, embedded systems, VLSI design and hardware/software codesign.
CmpE, CS – Background/interest in encryption, complexity theory and algorithms.
Computer architecture would be helpful but is not required.

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