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SEC-WEAR NTF

FNSNF

Building secure nodes for wearable sensor networks

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Motivation

Body area sensor networks will pervade our life collecting a large amount of sensitive data

Data stored and transmitted by wireless body sensor nodes need to be secured

SEC-WEAR focuses on two threats:

- Eavesdropping data transmitted from the node to the body central unit
- Tampering with a node and illegitimately accessing the data stored on it

Goal and Methodology

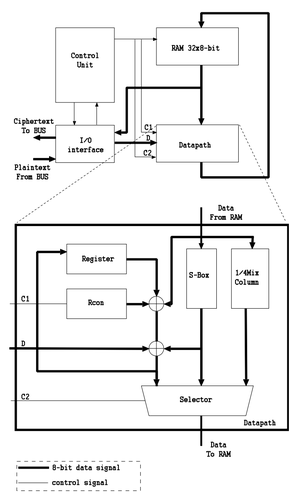
- To provide security complying with the energy constraints imposed by a wireless body sensor node

How?

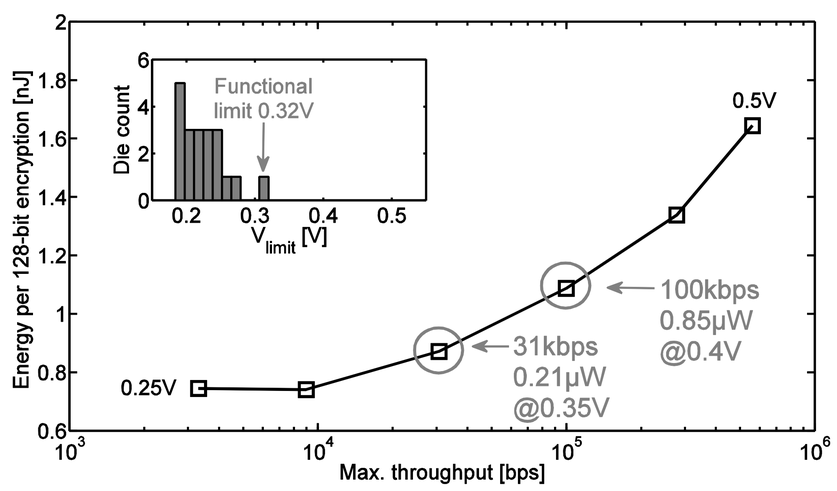
- Using standard algorithms rather than designing new ones
- Exploring the potential of novel libraries for realizing secure BASN nodes
- Examine the behavior of new libraries against fault attacks
- Examine the challenges of realizing a DPA resistant library using new libraries

Securing Sensor Nodes Using Dedicated Cryptographic Modules

Low Cost AES Implementation

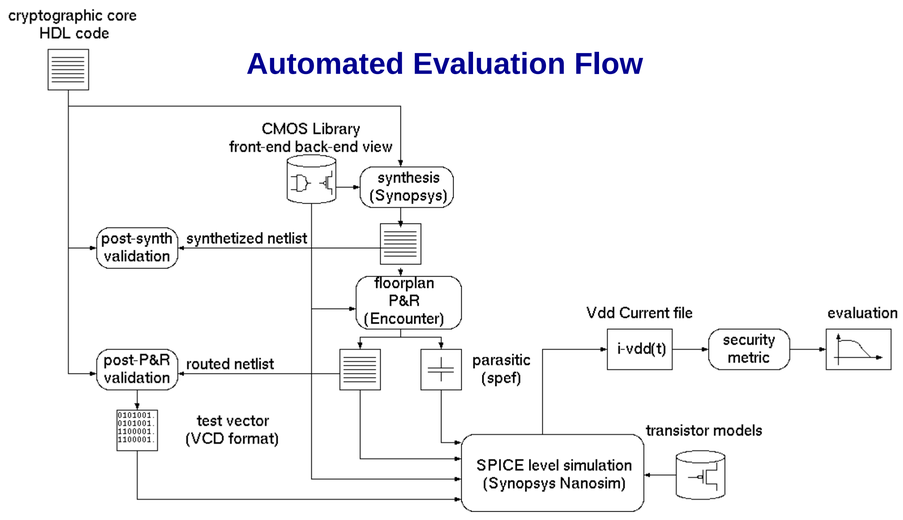


Energy per encryption vs max throughput

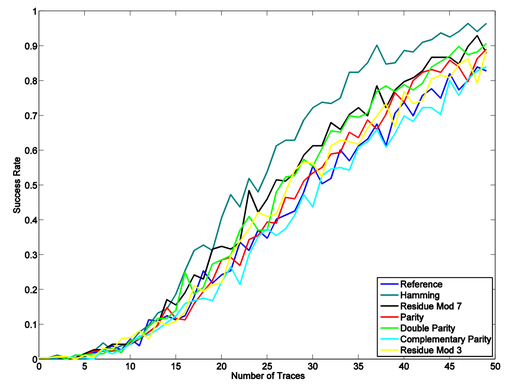


Resistance Against Fault Attacks

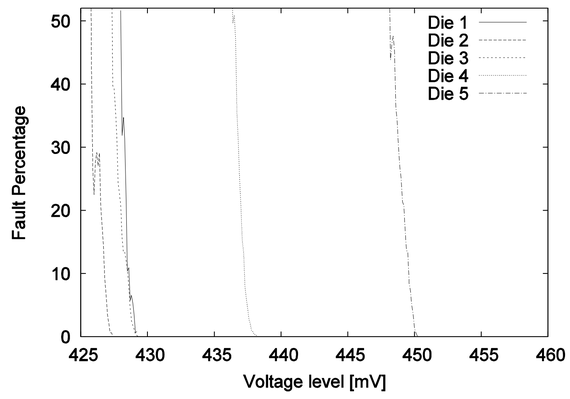
Automated Evaluation Flow



Effects of Error Detection Circuits on DPA

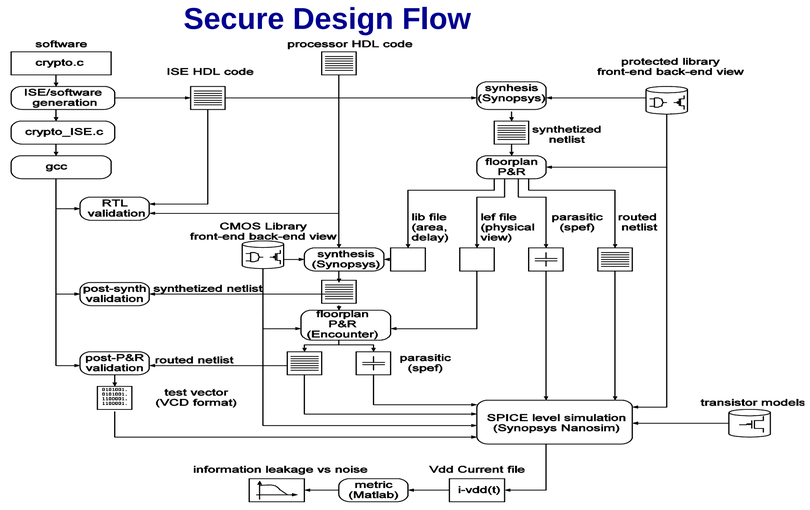


Low Cost Fault Attacks on 65nm sub-threshold AES

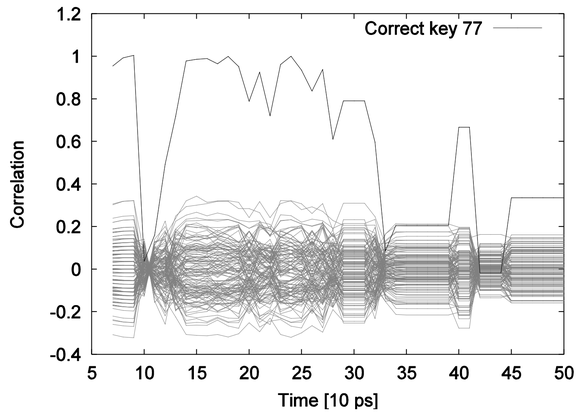


Resistance Against Power Analysis Attacks

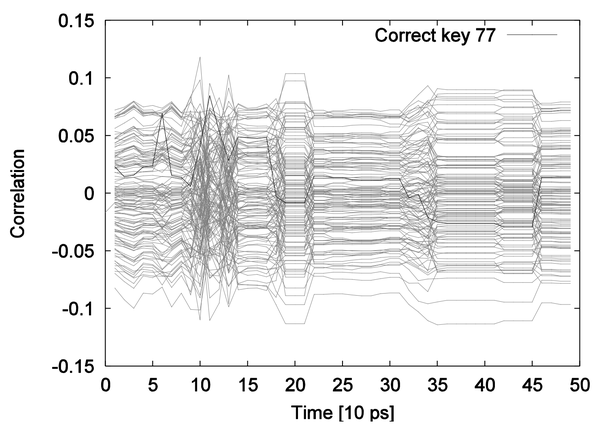
Secure Design Flow



DPA on Unprotected Library



DPA on Protected Library



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