

Smart and Novel System Design IC Laboratory

~ SNSD-IC LAB

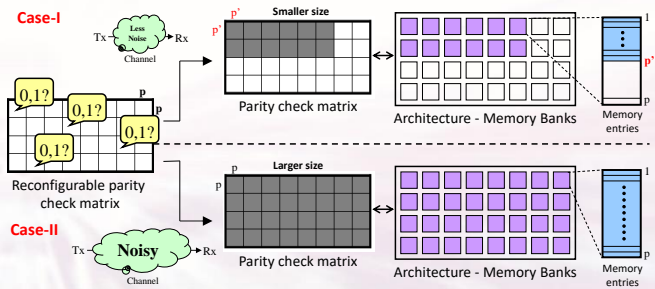
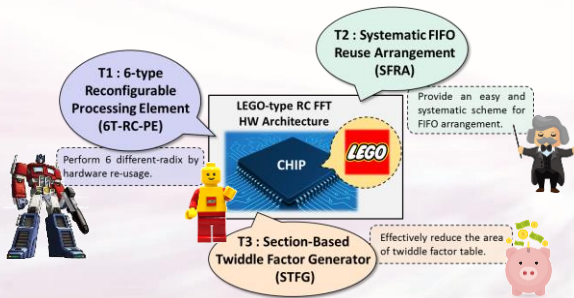
Lab. Main Research

Our lab puts a focus on developing next-generation system IC designs with **smart** and **novel** features. **Smart concept** delivers the IC system designs with any type of self-control ability and automatic configurations. **Novel deliverable** makes the IC system designs own a huge and critical impact on difference with others. The directions include as follows:

- ✓ Reconfigurable Polar-code decoders : Successive Cancellation (SC) & Successive Cancellation List (SCL) decoders
- ✓ Real-time programmable Low-Density Parity-Check (LDPC) decoders
- ✓ Training, classification, and detection of Hardware Trojans
- ✓ Multi-mode designs of fast Fourier transform (FFT)

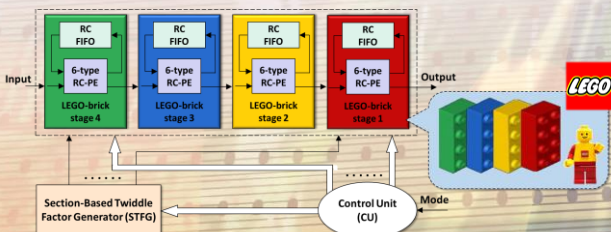
Projects/Highlights

- ✓ LEGO-based Reconfigurable LDPC Decoder Design with Hexagonal Network-on-a-chip Design Technique for Next-Generation Wireless Communication Systems
- ✓ Reconfigurable Polar Decoder Architecture with Low-Area, Low-Power and High-Performance Features for Next-Generation 5G Systems
- ✓ VLSI Design and Implementation of Multi-Mode Successive Cancellation List (SCL) Decoder with Innovative Combined-Type Design Structure
- ✓ Design and Implementation of Hardware Trojan Detection and System Protection Architecture with Low-Risk and Power-Saving Features

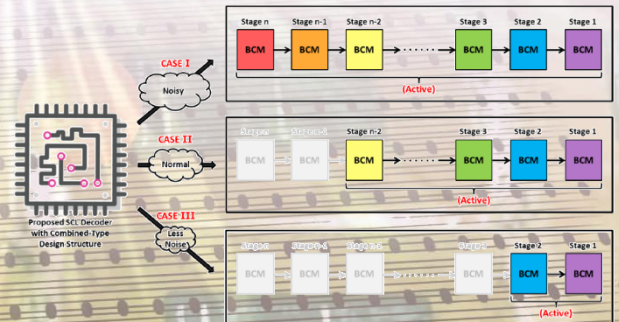


Real-time programmable LDPC decoders

Reconfigurable 48-mode FFT systems: techniques



Reconfigurable 48-mode FFT systems: architecture



Reconfigurable low-power SCL decoders