

Mahreen KHAN

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ABOUT ME

PhD researcher in microarchitectural security at Télécom Paris, IP Paris. Experienced in side-channel attacks, gem5 simulation, RISC-V, and hardware/software co-design. Passionate about low-level hardware analysis and security.

EDUCATION

PhD in Microarchitectural Security Ongoing (2024–2027)

Institut Polytechnique de Paris

- Title: Automated Vulnerability Assessment for Side-Channel Attacks
- gem5-based detection of RISC-V microarchitectural vulnerabilities

Master in Integrated Circuit Systems 2022–2023

Institut Polytechnique de Paris

- CGPA: 14.5 / 20.0
- Specialization: VLSI, IC design, hardware security

BS Electrical Engineering (Electronics) 2013–2017

PIEAS, Pakistan

- CGPA: 3.93 / 4.00 | Rank: 1st

WORK EXPERIENCE

Integrated Circuit Design Engineer Jul 2017 – Jun 2022

National IC Design Center (NIDC), Islamabad, Pakistan

- Verilog RTL design, FPGA debugging, static timing analysis
- Floorplanning, placement, clock tree synthesis, and DRC/LVS verification
- Tools: Synopsys, Cadence, Siemens Calibre

SKILLS

Hardware Design: Verilog, SystemVerilog, VHDL, RTL synthesis, FPGA prototyping

Tools: Cadence Genus/Innovus, Synopsys DC, Formality, Modelsim, Vivado

Security/Research: gem5, RISC-V, microarchitectural side channels, timing attacks

Soft Skills: Communication, Teamwork, Leadership, Time Management

PUBLICATIONS & CONTRIBUTIONS

- **SECRYPT 2025:** Assessing Security RISC: Analyzing Flush+Fault Attack on RISC-V using gem5 Simulator
- **EICC 2025:** Evaluating KASLR Break on RISC-V using gem5: Microarchitectural Side-Channel Analysis
- **DSD 2025:** Evict+ Spec+ Time on RISC-V: Gem5-Based Implementation and Microarchitectural Analysis
- **IEEE CSR 2025:** SpectreShield: Design and Analysis of Spectre Countermeasures on RISC-V Using gem5
- **IEEE IOLTS 2025:** Side-Channel Attack Detection using gem5 and Machine Learning: A Case Study on Fault-based Attacks in RISC-V
- **SAMOS 2025:** Prototyping Custom Hardware Performance Counters in gem5 Simulator: A Framework for RISC-V Side-Channel Attack Assessment

AWARDS

- 2017: Gold Medal, BS Electrical Engineering
- 2014: Fellowship, BS Electrical Engineering
- 2013: Laptop Award by Ministry of Education (A1 Grade)