Rohan I. Ojha

M.S. Electrical and Computer Engineering • Quantum Technology + Microelectronics and Semiconductors Concentrations

(301)-332-9936 • ojhar@purdue.edu • www.linkedin.com/in/rohan-i-ojha • https://github.com/Pencils113

Education

Purdue University - Pursuing Master's in Electrical Engineering in "4+1" program   2022-2026

- John Martinson Honors College, Dean's List and Semester Honors
- Cumulative GPA: **3.97**, Major GPA: **4.00**

Publication List

1) Y. Chen, A. M. McNeil, R. Ojha, Y. Liu, W. Cai, and A. Boltasseva, et al., "**Machine-learning-assisted photonic device development: a multiscale approach from theory to characterization**" Nanophotonics, accepted 2025.

2) B. Wilson†, Y. Chen†, R. Ojha, A. Boltasseva, V. M. Shalaev, and A. V. Kildishev, et al., "**Authentication through residual attention-based processing of tampered optical responses**" Advanced Photonics, 6(5), 2024.

3) **Patent:** A. V. Kildishev, B. Wilson, and R. Ojha, et al. "**Authentication systems and methods for electronics packaging**" US Patent Application No. 63/658,599, submission date: June 11, 2024.

4) B. Wilson, Y. Chen, R. Ojha, A. Boltasseva, V. M. Shalaev, and A. V. Kildishev, et al., "**Machine-learning-assisted optical authentication of chip tampering**" SPIE Optics + Photonics, 2024.

Work Experience

- **Sandia National Laboratories,** R&D Intern, Critical Skills Scholar   May 2024 - Present
  - Quantum Error Correction: ***Reconciling Quantum Circuit Simulations***. Software development and ECC threshold analysis using Stim, a high-performance quantum circuit simulator by Google.
  - Quantum-Resistant Root of Trust: *Designing Hardware for secure exchanges using AES-GCM, Kyber, SPHINCS+.*
- **Optics/Nanophotonics Lab Undergraduate/Graduate Research Assistant (PQSEI)**   Feb 2023 - Present
  - ***Co-authored, Patent Pending***: (SPIE Photonics Jul '24), ***Residual Attn-based Processing of Tampered Optical Responses***.
    - Proposed a gold nanoparticle-based Physically Unclonable Function (PUF) and developed an attention-based tampering detection algorithm in PyTorch to combat the $75 billion counterfeit chip industry (article) (press release).
  - Developed automation and control software (e.g., linear actuator, power meter, variable attenuator drivers) for a Hanbury Brown and Twiss experimental setup to assess single photon emitters and optimize their fabrication.
- **Purdue Electrical Engineering Fundamentals, Probabilistic Methods Teaching Assistant**   Aug 2023 - May 2025
- **National Institute of Standards and Technology (NIST) Physical Measurement Lab (PML) Intern**   Jun 2021 - Aug 2022
  - Developed Fast-Fourier Transform-based algorithms in Java for automated atom/dangling bond location and SEM image lattice determination, facilitating SEM procedures for atom-based device navigation and control.

Coursework and Skills

- *Software:* Python (PyTorch, numpy, pandas, scikit-learn), Github, OOP, C, RISC-V, MATLAB, Java, R, Excel
- *Math and Physics***:** Linear Algebra, Complex Analysis, Differential Equations, Electromagnetics, EM waves, Optics/Lasers
- *Quantum:* Quantum Information Theory, Computing, Hardware, Algorithms, Stabilizer Codes, Google quantumlib-Stim
- *Hardware:* Analog/Digital Circuitry, LTspice, Signals & Systems, Soldering, SystemVerilog, ASIC Design
  - ECE 437: Built **multi-core, pipelined RISC-V processor** in SystemVerilog, Finished top of class (A+ and PhD offer)

Awards and Honors

- **Gold Medalist –** Kaggle March Machine Learning Mania 2024 predicting March Madness tournament results.   2024
- **Certificate –** Semiconductor Fabrication 101: Purdue, UT Austin, and Intel sponsored course.   2024
- **Private Pilot Glider License:** (at age 16), 46 hours in Schleicher ASK-21, funded by O'Callaghan Scholarship.   2022
- **International Science and Engineering Fair (ISEF) – 3rd Place, Physics and Astronomy ($1,000).** Awarded for "Periodicity Felicity", a novel statistical method to search for binary black hole candidates.   2021