RAMAN PANDEY

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EDUCATION

University of New Mexico
Master's in Quantum Information Science **Aug 2025 – May 2026**

University of New Mexico
Bachelor's in Computer Engineering **Aug 2021 – May 2025**
Minors: Astrophysics

RESEARCH EXPERIENCE

Center for High Technology Materials, Quantum Undergraduate Research Experience May 2023 – Aug 2023

- Calibrated and maintained an atomic force microscope for surface topography and material property analysis.
- Designed microfabrication layouts using K-Layout.

Center for High Technology Materials, Senior Design Research Student(undergrad) Jan 2024 – Present

- Developed real-time FPGA-based signal processing algorithms for superconducting nanowire single-photon detectors (SNSPDs).
- Contributed to the NbTiN-based SNSPDs fabrication process.
- Designed experiments to validate SNSPD capabilities, integrating FPGAs, Time Taggers, single-photon emitters, amplifiers, and comparators.
- Demonstrated key quantum principles (Malus' Law, Quantum Eraser, Hanbury Brown and Twiss) using a Thorlabs quantum education kit.
- Researched and designed a fabrication process for quantum dots via the Stranski–Krastanov method.
- Authored and presented weekly research reports.

PROFESSIONAL EXPERIENCE

UNM IT Academics, Scheduler Supervisor **Jan 2022 – Present**

- Managed 20+ computer labs with over 200 systems, increasing lab utilization by 10% through optimized scheduling.
- Achieved 98% uptime by proactively maintaining lab equipment (including WEPA printing stations and specialized engineering software).
- Enhanced IT response times by 15% by streamlining issue reporting and resolution workflows.
- Developed a Python and JavaScript-based web application for automated SCON shift tracking, boosting student worker satisfaction by 50%.

Graduate Teaching Assistant **Jan 2025 – Present**

- Instructed 30+ students in digital logic design using Vivado and VHDL, covering Boolean algebra, combinational/sequential circuits, finite state machines, and FPGA development.
- Led hands-on lab sessions, evaluating VHDL simulations and FPGA implementations while emphasizing industry best practices.
- Provided individualized mentoring for debugging and optimization of VHDL designs.

SKILLS

Programming: Python, C/C++, VHDL, MATLAB, JavaScript
Additional: PHP, HTML, CSS, Ruby, C#, VB.NET

Software: Vivado, LabVIEW, K-Layout, Multisim, Tableau, Ledit

PROJECTS

FPGA Readout of SNSPD Signals (Jan 2024 – Present): Developed FPGA-based algorithms to process signals from superconducting nanowire single-photon detectors operating in cryogenic environments.

Planetary Simulation (Jan 2023 – Apr 2023): Created a simulation of planetary motion incorporating Kepler's and Newton's laws, with gradient descent optimization to calculate orbital paths.

German-to-English Neural Translator (Jan 2024 – May 2024): Designed a neural translation system using Transformer architecture to convert German to English, including dataset preprocessing.

Cassiopeia A Data Analysis (Jan 2025 – May 2025): Developed a machine learning algorithm to detect noise in data from Cassiopeia A, acquired via VLA interferometry.