

EDUCATION

University of Wisconsin, Madison

M.S. 2027 (Expected). Quantum Computing, Physics

University of Michigan, Ann Arbor

M.S. 2025. Quantum Engineering, Science, and Technology, ECE

GPA 3.53

Courses: Applied Quantum Mechanics I (ECE 540), Research Project in Quantum Information Theory, Research Project in Linear Algebra, Probability and Random Processes (EECS 501), Quantum Computing, Information, and Probability (ECE 598 005), Linear Systems Theory (ECE 560).

B.S.E. 2024. Electrical Engineering

Summa Cum Laude, GPA 3.81

Courses: Modern Physics (PHYS 390/391), Physics of Waves, Heat and Light (PHYS 340), Programming and Intro Data Structures (EECS 280), Embedded Control Systems (EECS 461), Principles of ML (EECS 453), Wireless Communication Systems (EECS 455), DSP Design Lab (EECS 452).

EXPERIENCE

Research Assistant, University of Michigan, Ann Arbor, August 2025 - May 2026

- Directed study with Prof. Sandeep Pradhan.
- Entangled quantum covering problem: Finding a set of random entangled bits to simulate an ideal input with less entropy such that the purity of the actual output density matrix is as close as possible to the purity of the desired output density matrix. (A entangled quantum version of Cloud Mixing).

Research Assistant, BIRDS Lab at UofM, Ann Arbor, August 2025 - May 2026

- Directed study with Prof. Shai Revzen.
- Observing efficacy of Dynamic Mode Decomposition on H-Map Oscillator (Wilshin et al. *Neural Comp.* 2025) in reconstructing eigenvalues of the original linear system from which the H-Map system was created.
- Studying phase estimation and stochastic differential equations.

Research Assistant, Minjilab at UofM, Ann Arbor, May 2025 - May 2026

- Wrote a Python package to de-noise 1-dimensional genomic sequencing data from ChIP-seq, ATAC-seq, snATAC-seq, and CUT&RUN methods, and streamlined package for user accessibility.
- Increased time and memory efficiency, handling files of up to 174 million reads in under 2 hours.
- Increased precision of biological motif overlap for CUT&RUN data from 14% (ATAC-Works, SOTA) to 75%.
- Worked on visualization tool to map and de-noise multiway genomic sequencing data (SPRITE, ChIA-Drop, etc.).

Formal Verification Intern, NVIDIA, May 2024 - Dec 2024

- Applied Formal Verification to arbitration component of MMU in GPU team.
- Designed and implemented testplan for component for all interface and end-to-end properties.
- Prepared slides and presentations for future training and documentation of MMU.

Project Lead, Mu-RoAM Research Team at UofM, Ann Arbor, Winter 2023 - 2024

- Led Powerboard subteam to assemble and test power management system for dynamic robots.
- Debugged pre-fabricated Powerboard PCB (verified in simulation).

AWARDS

James B. Angell Scholar - University of Michigan - Winter 2024.

University Honors - University of Michigan - Fall 2020, 2021, 2022, 2023; Winter 2021, 2022.

Dean's Honor List - Electrical and Computer Engineering, University of Michigan - Fall 2020, 2021, 2022, 2023; Winter 2021, 2022.

William J. Branstrom Freshman Prize - University of Michigan - Fall 2020.

PUBLICATIONS

Nandita J Gupta, Zachary Apell, Minji Kim, *Chrom-Sig: de-noising 1D genomic profiles by signal processing methods*, Bioinformatics, Volume 41, Issue 12, December 2025, btaf645, <https://doi.org/10.1093/bioinformatics/btaf645>

M. Harris, E. Cunningham, P. Guhathakurta, I. Cheshire, **N. Gupta**. *Kinematic, Photometric, and Spectroscopic Properties of Faint White Dwarf Stars Discovered in the HALO7D Survey*. Poster Presentation, American Astronomical Society Meeting # 231, Washington D.C., January 2018.

SKILLS

Using Qiskit, Coding in: C, C++, Verilog, VHDL, Python, Tcl/Tk, Perl, MATLAB, Mathematica, Java, LT-SPICE, Solidworks, Fabrication using: mill, lathe, CAD, soldering, 3D printing.