

Jaiman Parekh

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EDUCATION

New Jersey Institute of Technology

Sep. 2022 - May 2026 (Exp.)

Albert Dorman Honors College, Double Major in Applied Physics and Computer Science

3.78/4.00

EXPERIENCE

Computational Science Intern

June 2025 – August 2025

Black-box Optimization for Expensive Problems

Naval Nuclear Labs, Pittsburgh

- Implemented a Bayesian Optimization algorithm for maximization of high-dimensional, non-convex functions
- Developed scalable HPC workflows to perform over 100 benchmarking tests for common user applications
- Investigated various learning and sampling methods on performance across suite of scalable synthetic problems
- Explored theoretical and algorithmic improvements on special cases of computationally intense tasks
- Exposure to modern SWE/HPC practices and libraries as well as contributions to production code
- Granted L-level DOE security clearance

Undergraduate Research Assistant

Jan 2023 – Present

Magnetohydrodynamics (MHD) of Coronal Mass Ejections (CME)

Center for Solar-Terrestrial Research, NJIT

- Integrated a GPU-based renderer to HPC workflow for automated visualization of terabyte sized datasets
- Reduced runtime of MHD solver by over 50% by optimizing parallelization scheme for ~150 CPU cores
- Refactored and version-controlled legacy modules to replace hardcoded constants with user arguments
- Built robust automation and error handling scripts now used by lab members to streamline job submission
- Confirmed consistency of novel method to trigger CMEs with observation through key MHD metrics

Undergraduate Research Assistant

May 2023 – July 2023

Nonlinear Fluid Dynamics

NJIT

- Investigated perturbative effects of viscosity and surface tension on resonant waves
- Applied numerical methods to study nonlinear wave instabilities, reducing error propagation in surface simulations
- Built custom experimental apparatus to validate models, linking theoretical predictions with observed data

Tutor

Sept. 2023 - Present

NJIT Math and Physics Departments

Newark, NJ

- Calculus(1/2/3), Differential Equations, Linear Algebra, Statistics, Classical Mechanics, Electrodynamics
- Work with students of all ability levels by guiding them through problem-solving approaches

PROJECTS

Algorithmic Trading

Jan. 2025 - Present

- Built automated trading system for live financial data and executed trades through Alpaca and Polygon APIs
- Applied signal-processing and statistical techniques to denoise time-series data
- Built a modular pipeline for data ingestion and order handling
- Experimented with backtesting strategies on historical data

TECHNICAL SKILLS

Languages: Python, Javascript, C/C++, Bash, SQL, Fortran, MatLab

Dev Tools/Libraries: Git, React, Express, Slurm, PyTorch, Parsl, Conda, GDB, NumPy, Matplotlib, OpenMPI

AWARDS AND PRESENTATIONS

Albert Dorman Scholar: Full tuition merit scholarship for 2022-2026

Barry Goldwater Scholarship: Finalist 2025; Semi-finalist 2024

Presentations: Presented at NJIT Undergraduate Research and Innovation symposiums; 2023, 2024