

# Rohan Pandey

Bellevue, Washington | (425) 428-2971 | [rpande@uw.edu](mailto:rpande@uw.edu) | [Github](#) | [LinkedIn](#) | [Portfolio](#) (Beta) | U.S. Citizen

## EDUCATION

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**University of Washington, Seattle, WA**

Expected Graduation: March 2026

*BS in Applied and Computational Mathematical Sciences – Scientific Computing and Numerical Analysis*

*Relevant Coursework:* Machine/Reinforcement Learning, Data Structures & Algorithms, Database Systems, High-

Performance Scientific Computing, Optimization (Linear/Nonlinear/Discrete), Data Science, Advanced Neurotechnology

*Awards:* NASA Space Grant Awardee

## SKILLS

*Languages:* Python, Java, C++, MATLAB, MySQL

*Frameworks & Libraries:* TensorFlow, PyTorch, Scikit-learn, NumPy, Pandas, Matplotlib

*Tools:* Git, Linux/Unix, Vim, Bash, OpenBCI, Azure SQL Database, Simulink, Mathematica

*Core Competencies:* Reinforcement Learning, Deep Learning, Data Structures & Algorithms, Statistical Modeling, Optimization

## WORK EXPERIENCE

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**Fred Hutch, Data Scientist Intern, Seattle, WA**

August 2024 - Present

- Developed mathematical models based on systems of ODEs to simulate CAR T-cell and tumor interactions using parameter sets from B-ALL patient data
- Applied linear regression and MSE loss to train models predicting therapy outcomes and assess treatment plan efficacy
- Integrated techniques such as nonlinear mixed effects modeling, to capture immune-cell exhaustion and preconditioning dynamics

**Naval Surface Warfare Center, ML Intern, Bellevue, WA**

October – December 2024

- Developed a reinforcement learning framework using a DDPG agents in MATLAB and Simulink to optimize aerodynamic efficiency in axial turbomachinery
- Simulated complex physical dynamics with embedded control loops and reward functions targeting lift, drag, and energy efficiency tradeoffs
- Integrated streamline curvature methods and potential/Euler flow approximations into a multi-objective design optimization pipeline

**MINDCO LABS, Machine Learning Intern, Seattle, WA**

September – December 2024

- Designed and implemented an advanced real-time eye-tracking system for non-invasive brain-computer-interface to map gaze to on-screen word location
- Integrated gaze tracking with EEG headset signals to support a deep learning pipeline aiming to decode cognitive signals into textual output
- Explored model architectures such as CNNs and SVMs for decoding signal patterns, with plans to train mappings between EEG responses and gaze-inferred words

**SOCIETY of ADVANCED ROCKET PROPULSION, Lead Engineer, Seattle, WA**

October 2022 – June 2024

- Engineered ARES: a GPS-guided rocket recovery system with autonomous drogue deployment logic and fail-safe mechanisms for high-altitude reentry
- Built a real-time telemetry pipeline in C++ and Python to acquire, process, and transmit GPS and flight data from onboard microcontrollers

## RESEARCH EXPERIENCE

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**WASHINGTON eXPERIMENTAL MATHEMATICS LAB**

September 2024 - Present

- Engineered undetectable **checksum-triggered backdoors** in MLPs trained on MNIST by embedding activation logic into specific pixel parity patterns, achieving stealth misclassification with a **1/65,536 trigger rate**.
- Applied **orthogonal matrix transformations** to mask backdoor structure and preserve disjoint weight spaces, creating whitebox-robust models indistinguishable from clean baselines under gradient inspection.
- Explored **activation function disjointness** via hybrid **ReLU layers** to minimize model symmetry and obscure backdoor pathways, integrating theoretical cryptographic methods with adversarial ML.