Rohan Pandey

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EDUCATION

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)

SKILLS/TOOLS
Languages: Python, Java, C++
ML & Frameworks: PyTorch, TensorFlow, RL (PPO, DDPG), GNNs
Tools: Git, Linux, Docker
Math & Theory: Optimization, Probability, Linear Algebra, Numerical Methods
Scientific Computing: ODE systems, high-performance workflows

RESEARCH EXPERIENCE

Reinforcement Learning Researcher – UW Math AI Lab — September - Present
- Designed a reinforcement learning framework with **Proximal Policy Optimization (PPO)** and **Graph Neural Networks** to synthesize efficient arithmetic circuits for polynomials achieving **~70%** success on degree-m polynomials via curriculum learning and symbolic verification.
- Scaling framework to higher-degree synthesis and integrating **Monte Carlo Tree Search** to improve sample efficiency; preparing open-source benchmarks and submitting to ICLR/ICML/NeurIPS.

Applied Mathematician – Fred Hutchinson Cancer Center — August 2024 - Present
- Developed **mathematical models of CAR T-cell and tumor interactions** using systems of ODEs trained on patient-derived B-ALL data, applying regression and loss optimization to evaluate treatment efficacy.

Washington Experimental Mathematics Lab - UW — September 2024 – June 2025
- Developed **checksum-triggered backdoors** in MLPs on MNIST, embedding activation logic in pixel parity patterns and masking with orthogonal transformations to evade gradient inspection.
- Designed **hybrid ReLU activations** and cryptographic-inspired techniques to minimize symmetry, obscure backdoor pathways, and strengthen adversarial ML defenses.

Machine Learning Intern – Naval Surface Warface Center — October – December 2024
- Built a reinforcement learning framework with DDPG agents in MATLAB and Simulink optimizing aerodynamic performance on axial turbomachinery simulations under complex physical dynamics.

Machine Learning Intern – MINDCOABS — September – December 2024
- Engineered a real-time eye-tracking system integrating EEG headset signals with deep learning to decode gaze to text, contributing to BCI research

INDUSTRY EXPERIENCE

Machine Learning Engineer – Mercor — December - Present
- Built and deployed an end-to-end machine learning pipeline for large-scale text sentiment analysis, enhancing prediction accuracy through strategic model selection and metrics.
- Fine-tuned and evaluated transformer models on domain-specific data, improving performance via custom scoring
- Partnered on data preprocessing, model validation, and inference automation to support reliable experimentation and production-ready workflows.

Cloud & Digital SAP Intern – PricewaterhouseCoopers — June – August 2025
- Engineered high-performance **Python data pipelines** leveraging vectorization and parallel I/O concepts from scientific computing to reduce latency
- Built a secure, self-service web app for automated workflow configuration and monitoring