

# Spencer Purdy

---

spencerpurdy.github.io | spencerpurdy@gmail.com | (251) 281-4094  
github.com/spencerpurdy | huggingface.co/spencerpurdy

## SKILLS

---

**ML & AI** Fine-tuning (LoRA/PEFT), RAG systems, ensemble methods, neural networks, optimization  
**MLOps & Production** Model versioning, drift detection, monitoring, A/B testing, hyperparameter tuning  
**Tools & Technologies** Python, PyTorch, scikit-learn, Transformers, XGBoost, Optuna, ChromaDB, Git

## PROJECTS

---

### Neural Network Options Pricer with Greeks & Volatility Surface

- Built PINN with Black-Scholes PDE constraint trained on real AAPL options data via yfinance
- Computed five Greeks (Delta, Gamma, Vega, Theta, Rho) via PyTorch automatic differentiation
- Implemented volatility surface modeling, American options via LSM, and PPO-based hedging

### Deep RL Market Maker with Order Book Dynamics

- Built Gymnasium environment with 12-dimensional order book observations and action space
- Trained PPO agent using Avellaneda-Stoikov reward with PnL and quadratic inventory penalty
- Modeled order flow with Poisson arrivals, VPIN toxicity tracking, and square-root market impact

### Automated MLOps Framework for Customer Churn Prediction

- Built MLOps platform with model versioning, drift detection, and parameter optimization
- Developed ensemble models with Optuna optimization across XGBoost, LightGBM, and RF
- Implemented monitoring system with inference tracking, cost tracking, and interactive predictions

## EXPERIENCE

---

### Auburn University Office of Information Technology

Oct 2022 – Dec 2024

Software Quality Assurance Analyst

- Executed software testing protocols ensuring compliance with functional requirements
- Managed defect tracking and resolution workflows using Jira and qTest for development teams
- Collaborated with cross-functional teams to identify, document, and resolve software issues

### CGI

Jun 2024 – Jul 2024

Software Developer Intern

- Built full-stack Manager Dashboard using .NET 8 MVC for employee promotion and PTO tracking
- Led 8-person development team as Tech Lead, driving sprint completion and project deliverables
- Designed and implemented RESTful APIs with Entity Framework for scalable data management

### General Dynamics Mission Systems

May 2023 – Aug 2023

Computer Systems Engineering Intern

- Optimized mission-critical server performance on Littoral Combat Ships through testing
- Diagnosed and repaired enterprise hardware including MFDs and UPS using military procedures
- Validated network infrastructure through OS configuration and NTP synchronization testing

## EDUCATION

---

### Auburn University

May 2025

Bachelor of Science in Computer Science

Undergraduate Certificate in AI Engineering

GPA: 3.73/4.00 | Magna Cum Laude | Honors College

**Relevant Coursework** Machine Learning, Artificial Intelligence, Data Mining, Multi-Agent Systems, Software Modeling and Design, Software Construction, Introduction to Algorithms, Discrete Structures, Statistics for Engineers and Scientists, Topics in Linear Algebra, Database Systems I, Calculus III