Colin Pannikkat

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Education

Bachelor of Science in Computer Science **Expected June 2026**
Oregon State University | GPA: 3.97 *Corvallis, OR*
- Minors in Economics and Math
- **Relevant coursework:** Causal Inference, Data Structures, Algorithms, Operating Systems, Mathematical Statistics, Computer Architecture & Assembly Language, Discrete Math, Vector Calculus, Differential Equations, Linear Algebra

Master of Science in Artificial Intelligence **Expected June 2027**
Oregon State University | GPA: 4.00 *Corvallis, OR*
- Early completion via the Accelerated Master's Platform.
- **Relevant coursework:** NLP with Deep Learning, Deep Learning, Machine Learning, Operating Systems

Experience

Undergraduate Researcher September 2024 – Present
Forest Ecophysiology Lab (FEL), OSU *Corvallis, OR*
- Researching a mechanistic model of plant energy balance, exploring limitations of the model when predicting plant responses to stress conditions like droughts and heatwaves.
- Collaborating with lab members in bi-weekly meetings and managing version control using **Git** and **GitHub**.
- Building the **garisom-tools** Python package, providing an easy way to conduct experiments utilizing the GARISOM model.
- Refactored the process-based stomatal optimization model in **C++** using **OOP**, addressing inefficiencies.

QA/QC Intern July 2024 - September 2024
Zabble Inc. *Remote*
- Developed systematic testing plans to identify and document bugs, improving functionality and user experience.
- Developed a data partitioning ETL workflow using AWS Glue and PySpark, reducing AWS S3 costs by 33%.
- Collaborated in an **Agile** workflow using **Jira** and **Kanban** to manage and track user stories and story points.

Backend Software Engineering Intern April 2024 - June 2024
College of Business, OSU *Corvallis, OR*
- Designed and implemented a proof-of-concept chatbot for class and advising support, scaled to serve over 500+ students.
- Developed a **RAG** pipeline using **LlamaIndex** and **ChromaDB** for document storage and retrieval.
- Built an API for pipeline interaction with **Flask**, including **JWT**-based authentication.
- Collaborated with a 6-member team and stakeholders to define requirements and track progress through bi-weekly meetings.

Supplemental Instruction Leader May 2023 – June 2025
Academic Success Center, OSU *Corvallis, OR*
- Facilitated peer-led study tables for Intro to Microeconomics, supporting 40–60 students weekly by developing table plans, applying collaborative learning strategies, and synthesizing key concepts from course lectures.
- Collaborated with faculty and other SI leaders to align tables with course goals and enhance student outcomes.

Undergraduate Researcher September 2022 – June 2024
Secure AI Systems Lab (SAIL), OSU *Corvallis, OR*
- Led individual research projects including evaluation of adversarial perturbations in **NLP**, adversarial jailbreaking of **LLMs**, and evaluation of interpretable bias detection method for LLMs.

Projects

Automatic Differentiation Framework | *Python, NumPy*
- Implemented reverse-mode autodiff engine with dynamic graph construction for backpropagation; faster than PyTorch.

OSU Class Vacancy Notification | *Chrome Extension API, React, Python, Flask, MySQL*
- Built Chrome extension in 48 hours to notify users of class vacancies, reducing info lag from 30 to $<$2 minutes; 66 users.

Skills

Languages: Python, C, C++, R, Elm, JavaScript, TypeScript, HTML/CSS, Java, SQL, Bash
Frameworks & Libraries: PyTorch, NumPy, Pandas, Scikit-Learn, Matplotlib, StatsModels, Transformers, LlamaIndex, Pydantic, Flask, FastAPI, React, JWT, SALib, Ray Tune, Hyperopt, Optuna
Tools & Others: Git, LaTeX, VSCode, Makefile, ChromaDB, Slurm, Cubing

Extracurriculars

Participant (Winner 5x), Hackathon Club 2022 – Present
Member, Association for Computing Machinery 2023 – Present
President, Skate Club 2023 – 2025
President, Economics Club 2023 – 2024