Ceferino Patino

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Objective

Aspiring computer scientist eager to continue learning and develop practical skills through meaningful industry experience. Seeking opportunities to apply my software development knowledge while contributing to innovative projects.

Education

B.S. Computer Science — Lincoln, NE, United States
University of Nebraska – Lincoln — *May 2024 – May 2026*

Honors and Awards

Undergraduate Student Researcher Award — University of Nebraska – Lincoln
2025

Dean's List — University of Nebraska – Lincoln
Fall 2024 - Spring 2025

Skills

Languages: Python, C++, Rust, JavaScript, Lua, Bash, SQL, Nix, Go, Java

Frameworks & Libraries: PyTorch, OpenCV, Astro, React, Express.js

Tools & Platforms: Docker, K8, Git, Nix/NixOS, Maturin, MPI, HDF5, AWS, Django, PostgreSQL, MySQL, sqlite

Concepts: Machine Learning, RL/MARL

Software Engineering: SOLID, Agile, SCRUM, CI/CD, DevOps, Parallel Programming

Soft Skills: Team collaboration, Technical communication, Self-directed learning, Mentorship

Certifications

AWS Certified Cloud Practitioner — Amazon Web Services
October 2023 – May 2026

Experience

CSCE361 Software Engineering – University of Nebraska – Lincoln — Lincoln, NE, United States
TA under Dr. Bhuvana Gopal — *August 2025 – Present*

- Support students in labs, assignments, and group projects for CSCE361, a course focused on large-scale software development and engineering best practices.
- Host technical walkthroughs and office hours to assist with programming and technology tools.
- Grade quizzes and exams, and provide feedback on course deliverables.
- Facilitate team-based learning and help students understand software engineering concepts, including requirements analysis, design, testing, and maintenance.

Raman Lab – Washington University — Remote
Software Developer — *June 2024 – Present*

- Developed real-time imaging software for a 3D 2-photon lightsheet microscope processing 20 GB/s of image data.
- Designed parallel MPI/HDF5 data acquisition and OpenCV pipelines for volumetric dataset processing.

OASYS Lab – University of Nebraska – Lincoln — Lincoln, NE, United States
Undergraduate Researcher — *May 2024 – Present*

- Contributed to advanced MARL research in a graduate research group, developing a benchmark suite used by 20+ researchers internationally.
- Enabled dynamic agent/task/frame adaptation for open-system evaluation; used by 20+ international researchers.
- Developed `free-range-rust`, a Rust+CUDA backend to accelerate `free-range-zoo`, doubling environment performance.
- Integrated Python bindings with Maturin to expose custom CUDA logic for seamless use in RL workflows.
- Co-led MOASEI competition at AAMAS 2025 with 10+ teams, benchmarking MARL agents in open-agent/task settings

Danforth Plant Science Center — St. Louis, MO, United States
Software Developer — *December 2023 – August 2024*

- Developed computer vision software for analysis of underground agricultural data for plant phenotyping.
- Worked with developer teams to manage AWS infrastructure for processing high-density aerial crop data.

Open Source Contributions

nixpkgs NixOS Project
Contributor & Package Maintainer *May 2025 – Present*

- Contribute to nixpkgs with improvements, reviews, and new package additions
- Collaborate with the community to ensure package quality and build reproducibility

nixvim NixOS Project
Maintainer *May 2025 – Present*

- Maintain Nixvim, a modular Neovim compatibility port for Nix
- Add plugin support for popular vim plugins and neovim integrations and improve docs for the community

Turso Distributed Edge Database
Contributor & Package Maintainer *2025*

- Fixed a core bug in Turso, a distributed edge database built on libSQL, improving reliability for production users
- Collaborated with maintainers to review, test, and merge the fix into the main codebase
- Engaged with the open-source community to ensure robust, high-quality contributions

Projects

cpatino.com Personal
Web Development – JavaScript, Astro *May 2025 – Present*

- Built and deployed a personal site with Astro, optimized for minimal bundle size and fast loads

yumevim – "dream vim" Personal
Dev Tooling – Lua, Nix, Neovim *July 2024 – Present*

- Architected a modular, declarative Neovim configuration with Lua and Nix for reproducible setups across devices
- Implemented zero-downtime updates with atomic rollbacks using Nix flakes and Git

3D Volumetric 2-Photon Lightsheet Microscope Raman Lab – Washington University
Biotechnology / Microscopy – C++, MPI, HDF5, OpenCV *June 2024 – Present*

- Developed software for a cutting-edge 3D volumetric 2-photon lightsheet microscope—one of few worldwide
- Built parallel data acquisition pipelines with MPI and HDF5 handling 20 GB/s of image data
- Optimized imaging workflows with OpenCV for real-time processing of volumetric datasets

free-range-zoo OASYS Lab – University of Nebraska – Lincoln
AI / Reinforcement Learning – Python, PyTorch *April 2024 – Present*

- Developed open-environment benchmarks for POSG-based multi-agent RL (wildfire, cybersecurity, rideshare)
- Implemented vectorized training loops for MADDPG, COMA, and GNN-based RL policies
- Enabled dynamic agent/task/frame changes to benchmark adaptability in open systems
- Used by 20+ researchers internationally as a benchmark RL algorithms in multi-agent environments

free-range-rust OASYS Lab – University of Nebraska – Lincoln
AI / Reinforcement Learning – Rust, CUDA, Maturin *April 2024 – Present*

- Implemented custom CUDA kernels in Rust to accelerate dynamic RL environments
- Doubled performance of `free-range-zoo` through low-level vectorized space operations
- Exposed Rust/CUDA modules to Python via Maturin for seamless integration and use by other research groups

yumeami – "dream network" Personal
DevOps – Nix, NixOS *April 2024 – Present*

- Engineered modular NixOS configurations with separate system and home profiles across heterogeneous hardware
- Developed a self-hosted infrastructure integrating services, CI/CD pipelines, and custom tooling for automation
- Implemented declarative provisioning and deployment workflows enabling reproducible, scalable environments

Fonio Seed Computer Vision Donald Danforth Plant Science Center
Computer Vision – Roboflow, OpenCV *April 2024 – August 2024*

- Compiled and labeled a dataset of over 8,000 fonio seed images for robust model training
- Implemented a neural network achieving 99% accuracy in detecting overlapping seeds and providing precise counts

Rhizoroot.ai Donald Danforth Plant Science Center
Computer Vision / Agricultural AI – PyTorch, OpenCV, Django, Docker *December 2023 – August 2024*

- Developed a Django interface to run segmentation and extrapolate root volume
- Built root segmentation models using PyTorch for high-resolution root image data
- Processed segmentation masks with OpenCV to compute volumetric estimates achieving 97% accuracy

FieldDock Donald Danforth Plant Science Center
Computer Vision / Agricultural AI – OpenCV, Docker, AWS *December 2023 – May 2024*

- Deployed multiple components of a high-throughput drone data collection system using Docker and AWS
- Developed flight software for drone vision and landing leveraging OpenCV

qOverflow Black Data Processing Associates (BDPA)
Web Development – JavaScript, MongoDB, React, Express.js, Node.js *June 2022 – August 2022*

- Won first place in 2022 BDPA hackathon developing a Stack Overflow-inspired Q&A platform with custom analytics
- Containerized the app using Docker and deployed on Kubernetes; documented APIs with SwaggerHub

hypixel-helper Personal
Web Development – JavaScript, React, Redis *April 2022 – May 2022*

- Built live tracking and forecasting of Hypixel Skyblock marketplace data using SARIMA

Publications

Inaugural MOASEI Competition at AAMAS'2025: A Technical Report arXiv:2507.05469
Patino C., Billings T., Abadi A., Redder D., Eck A., Doshi P., Soh L. *2025*