

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 <i>University of Nebraska – Lincoln</i>	Lincoln, NE, United States <i>May 2024 – May 2026</i>
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Honors and Awards

Undergraduate Student Researcher Award	University of Nebraska – Lincoln <i>2025</i>
Dean’s List	University of Nebraska – Lincoln <i>Fall 2024 - Spring 2025</i>

Skills

Languages: Python, C++, Rust, JavaScript, Lua, Bash, SQL, Nix, Go, Java
Frameworks & Libraries: PyTorch, OpenCV, Astro, React, Express.js
Tools & Platforms: Docker, Git, Nix/NixOS, Maturin, MPI, HDF5, AWS, Django
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 <i>October 2023 – May 2026</i>
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Experience

OASYS Lab – University of Nebraska – Lincoln <i>Undergraduate Researcher</i> <ul style="list-style-type: none">Developed free-range-zoo, an open-environment MARL benchmark suite with support for MADDPG, COMA, and GNN-based policies.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	Lincoln, NE, United States <i>May 2024 – Present</i>
Raman Lab – Washington University <i>Software Developer</i> <ul style="list-style-type: none">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.	Remote <i>June 2024 – Present</i>
Danforth Plant Science Center <i>Software Developer</i> <ul style="list-style-type: none">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.	St. Louis, MO, United States <i>December 2023 – August 2024</i>

Open Source Contributions

nixpkgs <i>Contributor & Package Maintainer</i> <ul style="list-style-type: none">Contribute to nixpkgs with improvements, reviews, and new package additionsCollaborate with the community to ensure package quality and build reproducibility	NixOS Project <i>May 2025 – Present</i>
nixvim <i>Maintainer</i> <ul style="list-style-type: none">Maintain Nixvim, a modular Neovim compatibility port for NixAdd plugin support for popular vim plugins and neovim integrations and improve docs for the community	NixOS Project <i>May 2025 – Present</i>
Turso <i>Contributor & Package Maintainer</i> <ul style="list-style-type: none">Fixed a core bug in Turso, a distributed edge database built on libSQL, improving reliability for production usersCollaborated with maintainers to review, test, and merge the fix into the main codebaseEngaged with the open-source community to ensure robust, high-quality contributions	Distributed Edge Database <i>2025</i>

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