

Yaswant Sai Ejjagiri

✉ ejjagiri.yaswant24@gmail.com

in [linkedin.com/in/yaswant-ejjagiri](https://www.linkedin.com/in/yaswant-ejjagiri) |  github.com/yaswant2403 |  [Google Scholar](#)

EDUCATION

University of Illinois at Urbana-Champaign

Aug. 2021 – May 2025

Bachelor of Science in Computer Science + Astronomy, Minor in Physics and Math

Relevant Coursework: *Deep Learning for Computer Vision, Linear Algebra, Differential Equations, Statistics and Probability, Electromagnetic Fields, Classical Mechanics, Quantum Mechanics, Stellar Astrophysics, Computational Astrophysics, Applications of Machine Learning in Physics*

RESEARCH EXPERIENCE

Research Assistant

Sep. 2023 – present

National Center for Supercomputing Applications @ University of Illinois

Champaign, IL

- Advised by [Professor Xin Liu](#), working on Deep Learning-Driven (**DeepDISC**) deblending in astronomical imaging surveys using overlapping space-based (*Roman Space Telescope*) and ground-based (*Rubin/Large Synoptic Survey Telescope*) data | [Project Repo](#)
- Built and **parallelized** the joint Rubin–Roman **annotation pipeline** using multiprocessing and shared memory, generating MS-COCO-format labels with physically motivated matched-filter masks (using GalSim) for **100k cutouts containing 2M annotated galaxies and stars**, with a 99% per-image processing speedup over serial baseline
- Evaluated multiple Rubin–Roman fusion strategies including dual-encoder (Swin Transformer) **cross-modal contrastive learning**, knowledge distillation, and single-encoder channel concatenation; developed **embedding diagnostic tools** (cosine similarity, PaCMAP, feature ablation) to analyze learned representations across designs
- Built a custom **two-stage Friends-of-Friends and Hungarian catalog-matching pipeline** classifying detections into 9 blend and failure modes, plus a centralized metrics framework computing 15 scalar and binned metrics that are used across all downstream analysis
- Achieved a **10% increase in detection completeness** and a **3–5% point reduction in unrecognized blend fraction** using the joint-survey concatenated model, directly mitigating systematic errors that degrade weak lensing measurements and photometric redshift inferences
- Orchestrated training and inference on **NCSA Delta and NERSC HPC clusters** using SLURM job arrays, running multiple **50-epoch model training runs** over 42k Rubin–Roman cutouts and a 165-combination grid search over inference hyperparameters
- Mentored an undergraduate to build and deploy a **DeepDISC-UX** framework on cloud-based [Rubin Science Platform](#), **architecting the Django/Jinja stack** and implementing the core `dd_lib` library for end-to-end workflows

WORK EXPERIENCE

Technical Project Manager

Jan. 2022 – May 2025

Introduction to Computer Science Honors @ University of Illinois

Champaign, IL

- Mentored **25+ students** in developing NextJS + Supabase (PostgreSQL) web applications, React Native + Firebase applications, NodeJS applications with Express, and simulations using p5js and VPython
- Created **15+ effective and personalized tutorials** on building full-stack applications in programming languages such as NextJS, React, Unity, Python, JavaScript and HTML/CSS
- Established a per-team delivery process anchored by an **MVP specification document** and a **GitHub Kanban board**, with weekly check-ins driving teams toward fixed demo deadlines
- Built reusable **Next.js + Supabase starter templates** encapsulating authentication and database boilerplate, plus **cross-platform onboarding guides** for Windows and Mac dev environments, eliminating setup time
- Provided hands-on technical mentorship including **Postgres schema design from scratch** for multiple teams and debugging sessions resolving asynchronous data fetching errors and React state bugs

Full-Stack Web Developer & Computer Vision Engineer

Jan. 2023 – Aug. 2023

Applied Technologies for Learning in the Arts & Sciences (ATLAS) @ University of Illinois

Champaign, IL

- Trained a **YOLOv8 computer vision model** to detect the number of people visible in a YouTube live stream of the University of Illinois Quadrangle
- Annotated a custom dataset of **450 Quad Cam images** and trained different iterations of YOLOv8s, changing parameters such as image size, learning rate, and non-maximum suppression + IOU threshold

- Achieved a **50% improvement in model performance** (Mean Average Precision: 0.60 → 0.90) through hyperparameter tuning and by utilizing YOLOv8s-p2 to detect and localize smaller objects more accurately
- Deployed the model to a **Flask application** that performs **real-time inference** and presents detections through a periodically updated histogram to provide valuable marketing data for student organizations | [Project Repo](#)
- Developed a **full-stack web application** to generate customized paragraphs (Spotlights) about ATLAS Interns utilizing NodeJS, Express, EJS, CSS, and OpenAI's gpt-3.5-turbo API | [Project Repo](#)
- Implemented **OpenID Connect authentication** with Azure Active Directory through Passport.js
- Integrated **account management** with all CRUD operations using **MySQL and Sequelize** to store interns and their Spotlights, staff, and admin, streamlining the workflow of editing and publishing Spotlights

PUBLICATIONS

- Merz, G., Liu, X., Schmidt, S., et al. (incl. **Ejjagiri, Y.S.**), “[DeepDISC-Photoz: Deep Learning-Based Photometric Redshift Estimation for Rubin LSST](#),” *The Open Journal of Astrophysics* (2025)
- **Ejjagiri, Y.S.**, Merz, G., Liu, X. “DeepDISC: Deep Learning-Driven Deblending Using Overlapping Roman and Rubin LSST Data” *in preparation*
- Yadav, P., **Ejjagiri, Y.S.**, Merz, G., Liu, X. “DeepDISC on LSST Data Preview 1: Scene-Level Detection, Deblending, and Star/Galaxy Classification in the ECDFS and EDFS Fields” *in preparation*

PRESENTATIONS & TALKS

DeepDISC: Deep Learning-Driven Deblending Using Overlapping Roman and Rubin LSST Data

- Poster – [AAS Winter Meeting](#) | [View Poster](#) Jan. 2026
- Poster & Lightning Talk – [Dark Energy Science Collaboration Meeting](#) | [View Poster](#), [Talk \(1:13:55\)](#) Jul. 2025
- Poster & Lightning Talk – [Cosmic Cartography with Roman](#) | [View Poster](#), [Talk](#) Jul. 2025
- Poster & Lightning Talk – [Center for Decoding the Universe Annual Conference](#) | [View Poster](#), [Talk](#) Jun. 2025

TEACHING EXPERIENCE

Guest Lecturer

Apr. 2026

ASTR 596: AI and Big Data in Astronomy @ University of Illinois

Champaign, IL

- Designed and delivered a **80-min hands-on lab** on **multimodal representation learning** for joint astronomical surveys, covering self-supervised pretraining across different data modalities (images, spectra, light curves) and cross-modal contrastive learning for shared embedding spaces
- Created all lab materials for **12 graduate students** including a [Google Colab notebook](#) with live coding exercises, a slide deck, and a comprehensive homework assignment

Undergraduate Grader

Aug. 2024 – May 2025

Department of Astronomy @ University of Illinois

Champaign, IL

- Graded weekly homeworks, labs, and discussion posts for **100+ students** providing written feedback across *ASTR 100: Introduction to Astronomy* and *ASTR 350: Big Bang, Black Holes, and the End of the Universe*

OUTREACH EXPERIENCE

President

Sep. 2021 – Sep. 2024

Astronomical Society @ University of Illinois

Champaign, IL

- Supervised and coordinated Public Open Houses with **250+ attendees**, identifying visible planets through 12” Refractor Dome Telescope and educating guests on the history of the Observatory
- Redesigned club website with **NextJS** to increase functionality and accessibility for members and general public
- Built **1st-place exhibit** (*Stellar Solar Observing*) for **Outstanding Freshman Exhibit** at annual Engineering Open House 2024, engaging over **300+ guests** of all ages and backgrounds
- Facilitated **bi-weekly club meetings** aimed at educating members about astronomy through presentations and professional workshops featuring professors and graduate students as guest speakers

PROJECTS

Facebook Famous | C++, CMake, Jupyter Notebook, Python, Git

Nov. 2022 – Dec. 2022

- Programmed C++ application to search for the most influential user within a subset of Facebook’s egocentric network using PageRank and Betweenness Centrality algorithms

Sentiment Analysis Discord Bot | Python, Discord.py, Jupyter Notebook, Azure, Git

Sep. 2022 – Dec. 2022

- Developed backend of a Sentiment Analysis Discord Bot using NLP with NLTK and scikit-learn
- Utilized term frequency-inverse document frequency to vectorize data, Random Forest classifier to train the model and hyperparameter tuning to improve model's accuracy

Survival Analysis Model - Top 10 in Illinois Datathon | *Python, Jupyter Notebook, Git*

Mar. 2023

- Implemented the Kaplan-Meier method to create a survival analysis model to forecast the number of monthly charge-offs (uncollectible debts) from Feb. 2020 - Jan 2021 using Python's scikit-survival

TECHNICAL SKILLS

Languages: Python, C++, C, SQL (MySQL, PostgreSQL), JavaScript, HTML/CSS, R, MATLAB

Frameworks & Developer Tools: PyTorch, Detectron2, Astropy, GalSim, React, React Native, NextJS, Node.js, Express, Supabase, Firebase, Flask, Azure, Docker, AWS, Git, SLURM, Visual Studio Code