Prerana Kottapalli

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in prerana-kottapalli | ⬡ PK0207 | ⬤ Prerana Kottapalli

EDUCATION

• **University of Florida** — *January 2025 - June 2030*
PhD in Astronomy — Gainesville, FL, USA

• **Durham University** — *September 2024*
MSc in Scientific Computing and Data Analysis in Astrophysics — Durham, United Kingdom
◦ Grade: Distinction

• **University of California Santa Barbara** — *June 2022*
BSc in Physics with a Minor in Astronomy — Santa Barbara, CA, USA

PUBLICATIONS

[1] *Poster* Prerana Kottapalli, et al. (2023). **Investigation and Characterization of Random Telegraph Signal on CMOS Detectors on New LCO Telescope Installations for the BANZAI Data Reduction Pipeline**. In *AAS meeting 241*, January 2023, Seattle.

[2] *Submitted* Alex Thomas, Natalie LeBaron, Luca Angeleri, Phillip Morgan, Varun Iyer, **Prerana Kottapalli**, Enda Mao, Samuel Whitebook, et al. (Year). **The Local Galactic Transient Survey Applied to an Optical Search for Directed Intelligence**. Manuscript submitted for publication in *Astrophysical Journal*.

[3] Technical Document Alex Thomas, Natalie LeBaron, Luca Angeleri, Samuel Whitebook, Rachel Darlinger, Phillip Morgan, Varun Iyer, **Prerana Kottapalli**, Enda Mao, Jasper Webb, et al. (2025). **TRIPP: A General Purpose Data Pipeline for Astronomical Image Processing**. Supporting technical document for submitted paper.

[4] *Python Code Package* Prerana Kottapalli (March 3, 2023). **cmos-noise-map**. A tool to create a read noise map for CMOS detectors by modelling Random Telegraph Signal. This was originally created for use by LCOGT's BANZAI pipeline. Read the docs

RESEARCH EXPERIENCE

• **Graduate Research Assistant** — *October 2024 - Present*
Dr. Keri Hoadley, UV Space Laboratory — University of Florida, Gainesville, USA
◦ Developing a protoplanetary disk radiative transfer model to incorporate disk winds

• **Graduate Research Assistant** — *December 2023 - September 2024*
Dr. Azadeh Fattahi-Savadjani, Theoretical Cosmology — Durham University, UK
◦ Compared the performance of the cosmological N-body hydrodynamic codes, and found significant domain decomposition issues slowing down performance.
◦ Simulated galaxy formation using a semi-analytical model GALFORM.
◦ Analyzed dwarf galaxy populations in simulations and found link between environment overdensity and distance of satellite galaxy from its host.

• **Science Operations and Data Analyst** — *March 2022 - March 2023*
Las Cumbres Observatory [⬤] — Goleta, CA, USA
◦ Developed echelle spectrograph data reduction, achieving 40% improvement in radial velocity precision.
◦ Used machine learning to model and predict CMOS imaging sensor noise, improving uncertainty quantification in image data products.
◦ Packaging the new feature: cmos-noise-map toolkit in Python to quickly generate visualizations of data to explore quality of spectra, and writing detailed documentation.
◦ Presented findings at an AAS 241 poster session

• **Undergraduate Research Assistant** — *January 2019 - January 2023*
Dr. Philip Lubin, Deepspace Cosmology — Goleta, CA, USA
◦ Developed a difference image analysis based fast-transient searching pipeline.
◦ Developed a multichroic camera that simultaneously captures images in SDSS g', r', and i' bands.
◦ Presented findings at the undergraduate research symposium at the Kavli Institute for Theoretical Physics

TALKS AND POSTER PRESENTATIONS

- **Poster: Investigation and Characterization of Random Telegraph Signal on CMOS Detectors on New LCO Telescope Installations for the BANZAI Data Reduction Pipeline** [🌐]
  AAS 241, Seattle, January 2023
- **Talk: 1,000 Pictures, 10,0000 Pictures** [🌐]
  Santa Barbara, CA, February 2023
- **Talk: Lightcurve Construction Techniques for Intelligent Light Sources** [🌐]
  Kavli Institute for Theoretical Physics, September 2021

TEACHING AND OUTREACH

- **Graduate Teaching Assistant** *January 2025 - Present*
  University of Florida
- **Course DEI representative for the Computer Science Department** *September 2023 - June 2024*
  University of Durham
- **Learning Assistant** *June 2021 - March 2022*
  University of California Santa Barbara
- **Vice-President and President of Undergraduate Diversity and Inclusion and Physics** *June 2020 - June 2022*
  University of California Santa Barbara
- **Co-founder Astronomy Society at UCSB** *September 2019 - June 2022*
  University of California Santa Barbara

SKILLS

- **Programming Languages:** Python, R, C, C++, UNIX, HTML5, CSS, OpenMP, MPI, CUDA, SYCL, SQL
- **Web Technologies:** GitHub, Google Cloud Platform, MS Office Applications
- **Data Science & Machine Learning:** Convolutional Neural Networks (CNN), Generative Adversarial Networks (GAN), Gaussian Process Regresison, clustering techniques, tensorflow
- **Specialized Area:** IRAF, SExtractor, SAODS9, AstroImageJ
- **Mathematical & Statistical Tools:** Mathematica, Wolfram Alpha

HONORS AND AWARDS

- **Central Coast Data Science Fellowship** *September 2021*
  University of California Santa Barbara [🌐]
  ∘ A program to promote the application of data science to real-life projects
  ∘ Developed a web application (CalCOFI.io: Capstone App) for the California Cooperative Oceanic Fisheries Investigations.

- **Chairman's Appreciation Award** *June 2022*
  Department of Physics, UCSB
  ∘ An award for outstanding contributions that enhance the UCSB Physics Community

- **The UCSB Edison STEM Research Scholarship** *January 2020*
  University of California Santa Barbara
  ∘ Research grant to fund the development and installation of the multichroic camera

- **Dean's Honors for High Achiever** *June 2020*
  University of California Santa Barbara