Athulith Paraselli

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Portfolio: https://aparaselli.github.io/

Research Interests

Trustworthy Machine Learning, Mechanistic Interpretability, Multimodal Artificial Intelligence

Education

Brown University, Providence, RI — Sep 2025 - May 2027
Master of Science, Computer Science - Artificial Intelligence/Machine Learning

University of California, San Diego (UCSD), La Jolla, CA — Sep 2021- June 2025
Bachelor of Science, Mathematics-Computer Science, *Data Science Minor* — cGPA: 3.82 / 4.00

Research Experience

Graduate Research Assistant, Brown University — Sep 2025 – Present
Advised by Dr. Ellie Pavlick

- Designed and conducted experiment to understand visual demographic biases within VLMs.
- Developed generalized pipeline for activation patching and logit lens within VLMs.
- Created steering vectors and applied them at inference to allow for training-free bias correction.

Undergraduate Research Assistant, UCSD — Apr 2025 – Aug 2025
Advised by Dr. Xi Li and Dr. Zhuowen Tu

- Developed novel multimodal adversarial training pipeline to improve robustness of VLMs by 12%.
- Integrated LoRA and prompt tuning in a unified training loop, enabling flexible defense strategies.

Undergraduate Research Assistant, UCSD — Nov 2024 – Nov 2025
Advised by Dr. George Sugihara

- Designed and implemented a hybrid-LSTM model in PyTorch, achieving 70% accuracy in forecasting algal blooms.
- Fine-tuned Chronos, a foundation model for time-series forecasting, on ecological data to reduce weighted quantile loss (wQL) of algal bloom predictions by 32%.

Technical Experience

Software Engineer Intern, Qualcomm — Jun 2024 – Sep 2024
Modem Integration Testing

- Created an efficient unit testing workflow through optimizing existing industry-standard methods.
- Implemented functionality to automatically generate unit tests based on customer specifications.

Working Papers

Predicting Bioluminescent Algal Blooms Using "EDM-LSTMs"
Athulith Paraselli, Ciro Zhang, and George Sugihara

Teaching Experience

Undergraduate Instructional Assistant
Conduct exam review sessions, design homework/exams, hold weekly office hours, grade assignments
Principles of Data Science, *UCSD* — Apr 2024 - Jun 2025
Advanced Machine Learning Methods, *UCSD* — Apr 2025 - Jun 2025

Technical Skills

Programming Languages
Python, C/C++, Java, Perl, ARM Assembly, MATLAB, SQL, HTML, CSS, JavaScript, Svelte

Areas of Expertise
Version Control(Git/Github), Machine Learning(Scikit-learn, Pytorch, Tensorflow, Keras, Hugging Face, NNSight), AWS(Amplify, API Gateway, Lambda, DynamoDB)

Services & Outreach

Eta Kappa Nu (HKN) Projects Program Nov 2024 – Jun 2025

Inaugural Project Lead

- Led a team of 4 students to develop a live data processing pipeline and website to display Bioluminescent algal bloom forecasts.
- Established connections between Labs at Scripps Institution of Oceanography and Eta Kappa Nu.
- Coordinated community outreach initiatives, presenting accessible explanations of Harmful Algal Blooms and sharing updates from ongoing research collaborations.
- Presented results at San Diego Undergrad Tech Conference.

Eta Kappa Nu (HKN) Events Team Mar 2024 – Jun 2025

Math-CS Events Chair

- Organized and led technical workshops on fundamental ML concepts such as neural networks and gradient descent, enhancing accessibility for underclassmen.
- Collaborated with board members to coordinate events, recruit inductees, and promote technical engagement across the department.

Awards & Honors

- Eta Kappa Nu (IEEE HKN) Member, *UCSD* 2023-2025
- Provost Honors x11, *UCSD* 2021-2025