Aidan J Maldonado

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Education

- **University of California, Santa Cruz - GPA: 3.63** Sep. 2022 - Jun. 2026
  - Bachelor's of Science in Computer Science - *Declared*
  - Minor in Applied Mathematics - *Pursuing*
- **De Anza College - GPA: 4.00** Jun. 2023 - Jun. 2026
- **Las Positas College - GPA: 4.00** Jun. 2023 - Jun. 2026

Relevant Coursework

Machine Learning and Data Mining *(UCSC - CSE 142)* • Data Structures and Algorithms *(UCSC - CSE 101)* • Analysis of Algorithms *(UCSC - CSE 102)*
Principles of Computer Systems Design *(UCSC - CSE 130)* • Research Explorations *(UCSC - CMPM 15)* • Computer Systems and C Programming *(UCSC - CSE 13s)*
Classical and Bayesian Inference *(UCSC - Stats 132)* • Intro to Software Engineering *(UCSC - CSE 115a)* • Linear Algebra *(UCSC - Math 21)*
Theory and Practice of Peer-Guided Learning for Tutors and Learning Assistants *(UCSC - Stev 96)* • Artificial Intelligence *(UCSC - CSE 140)*

Learning Support Services Tutor
Sep. 2023 - Present

- **LSS Large Group Tutor for Discrete Math** Sep. 2023 - Dec. 2023
  - Facilitating and engaging large groups of 10-20 students through collaborative and individual activities each tutoring session. Providing individualized, equitable tutoring and conceptual help for my smaller 2-5-person sessions. Tailoring critical, specialized lesson plans during these smaller sessions paired with constructive, student-centered feedback ensures each student excels in thorough class understanding and uplifts all who attend.
  - Preparing and hosting three one-hour weekly engaging sessions and three-hour long Midterm and Final review sessions, attracting up to 90 people.
  - Communicating clearly and effectively across diverse audiences, using verbal, visual, and interactive methods while addressing individual student needs.
  - Maintaining an efficient and well-organized schedule by collaborating with my co-tutor to plan and host joint sessions, attending weekly meetings with my mentor and supervisors, and ensuring timely communication through Slack and email. Consistently incorporating mentor feedback to improve every new session.
  - Utilizing retained knowledge from my experience taking Discrete Math to help others through places I know are demanding.

Research

- **Protein Synthesis Modeling - Razvan Marinescu Molecular Dynamics Machine Learning Lab |** *Undergraduate Researcher* Dec. 2023 - Present
  - Assisting in graduate level research under the supervision of Professor Marinescu and his PHD student, where technical skills in Bayesian Statistics, Machine Learning, Discrete Mathematics, Python, and data visualization with libraries such as NumPy, SQL, and Pandas are being applied.
  - Actively working with peers during 3-hour meetings twice a week and more individually to speed up the process of simulating protein self-assembly in viruses with the goal of a human brain cell simulation for medical applications by clustering atoms and parallelizing the all-atom forces for each cluster.
- **Computer Vision Video Recognition - Eric Wang Research Lab |** *Undergraduate Researcher and Data Scientist* Jan. 2024 - Present
  - Creating and training a machine learning model to recognize the features of a video by gathering data on dozens of videos, drafting reasoning, counterfactual, future prediction, and domain-specific inquiries to create a tool comparable to Google's Bard in terms of video recognition capabilities.
  - Tasked with developing a model with equally efficient output given resource constraints.

Projects

- **Generative Language Model |** *Python, NumPy, Pandas* Jun. 2024
  - Developed an n-gram corpus perplexity monitor capable of learning speech patterns and predicting text likelihood, used to construct a statistical analysis-based predictive text completer.
  - Integrated various next-word selection methods, including k-random sampling, temperature scaling, and greedy word prediction.
- **Penny Stock Forecasting Web app with LSTM Model |** *PyTorch, SQL, TensorFlow/Keras, HTML/CSS/JS, Flask, Polygon.io API, MatPlotlib* Jul. 2024 - Present
  - Developed a web app using MySQL, Flask, and deep learning frameworks (TensorFlow/Keras, PyTorch) to predict penny stock prices, utilizing an LSTM model with a prediction loss of <0.004 and integrating real-time stock data from Polygon.io.
  - Created an interactive frontend with HTML/JavaScript to display stock forecasts and optimal buy/sell times based on a specified horizon value, enabling user interaction and communication with the backend model.
  - With a team of 5, incorporating Scrum/Agile workflow practices to streamline development and maintain a concise, informative communication of ideas.
- **Deep Learning Library from Scratch |** *Python, NumPy, Pandas, MatPlotLib* Jan. 2024 - Present
  - Combining skills cultivated from clubs, research, coursework, and independent research to create a Machine Learning library from scratch in Python. Utilizing libraries such as NumPy and Pandas to implement various Supervised and Unsupervised models and concepts such as Linear Regression, Logistic Regression, Recurrent Neural Networks, and Clustering with K-means only using math.
  - Created a graphing library as an extension of MatPlotLib to create detailed plots of datasets efficiently.

Technical Proficiencies

- **Programming Languages / Libraries**
  - Accomplished in Python, C/C++, NumPy/Pandas, PyTorch, TensorFlow, Keras, SNN Torch, SKLearn, RISC V Asm, SQL, HTML/CSS/JS
- **Developer Tools / Technologies**
  - VSCode, PyCharm, Google Workspace, Google Colab, Jupyter, GitHub, Linux, Ubuntu, Virtualbox, Parallels, Microsoft Office, Fusion 360
- **Teamwork and Communication**
  - Proficient in working within Scrum-based environments, encompassing all aspects from user and manager communication to development.
  - Speak/Read/Write English and Spanish, studying Japanese

Leadership / Student Involvement

- **UCSCAI | Club Member** Jan 2024 - Present
  - Engage in weekly workshops, study sessions, community outreach, informational lectures, hackathons, and group projects with peers and mentors who share a passion for everything related to Machine Learning and Artificial Intelligence.
- **Google Student Developer Club UCSC | Club Member** Sep. 2022 - Present
  - Attend weekly meetings and workshops to learn about various fields of Computer Science, prepare for technical interviews and life in the industry, and connect with peers to make friends and help uplift one another.