Aydin Tabatabai

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Education

University of California, San Diego La Jolla, CA
*B.S. in **Cognitive Science**, Specializing in **Machine Learning*** *Graduation: Jun. 2025*
*Minors: **Computer Science**, **General Biology*** *GPA: 3.62*

- Relevant Coursework: Data Structures & Algorithms, Supervised/Unsupervised Learning, Neural Networks & Deep Learning, Reinforcement Learning, Large Language Models, Systems Programming

Experience

Machine Learning/AI Intern Jan. 2025 – Present
Soaper LLC *Remote*

- Fine-tuned multiple LLM models using LoRA to generate structured medical responses, leveraging Azure OpenAI to generate custom synthetic training datasets.
- Improved model accuracy, consistency, and clinical alignment through iterative prompt engineering, data refinement, and validation set evaluation.
- Built a FastAPI search endpoint using PostgreSQL full-text indexing to retrieve medical notes, labs, and imaging results, while creating Pytest tests to validate search results.

Projects

Deep Learning Model Evaluation | *Python, PyTorch, Matplotlib, Git*

- Developed and benchmarked 7 convolutional neural network models, including custom CNNs, ResNet18 variants, and VGG11, to explore the effects of architectural and training choices.
- Investigated the impact of model depth, activation functions (ReLU, LeakyReLU), optimizers (Adam, SGD), batch normalization, and dropout.
- Evaluated model performance using training loss, test accuracy, and training time, while visualizing learning behavior and trends with Matplotlib.

Supervised Learning Algorithm Comparison | *Python, Scikit-learn, Matplotlib, Git*

- Designed and implemented experiments to evaluate the performance of Random Forest, SVM, and Logistic Regression on three UCI datasets, leveraging multiple train/test splits and cross-validation.
- Conducted rigorous hyperparameter tuning using GridSearchCV, optimizing metrics across three train/test splits to ensure robust model evaluation and generalization.
- Analyzed and visualized trends in training, validation, and testing accuracies, highlighting the impact of dataset complexity, hyperparameter settings, and training size on model performance.

AI Academic Impact Case Study | *Python, NumPy, Seaborn, Git*

- Conducted a comprehensive analysis on university course dataset to assess the impact of AI tools on academic performance.
- Applied data cleaning, exploratory analysis, and hypothesis testing to identify key insights, such as reduced study hours and improved GPA due to AI tool adoption.
- Demonstrated proficiency in data visualization and statistical methods to present findings.

Technical Skills

Languages: Python, Java, C/C++, SQL (Postgres), JavaScript, Swift, Bash, HTML/CSS, MATLAB
Libraries/Frameworks: PyTorch, TensorFlow, Scikit-learn, FastAPI, SwiftUI
Tools/Technologies: Git, Azure