

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 LLMs 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*

- 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.

Volleyball RL | *Python, PyTorch, Gymnasium*

- Designed and trained volleyball agents using DQN, A2C, CEM, and PPO in a custom Gym environment, integrating curriculum learning, reward shaping, and exploration rewards to improve performance.
- Evaluated agents over 1000+ episodes using metrics like average reward and win rate, with PPO achieving an 80% win rate against a strong baseline.
- Analyzed how different RL algorithms learn and adapt to different rewards, exploration strategies, and opponent behaviors in dynamic multi-agent environments.

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

- 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*

- 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/TypeScript, Swift, Bash, HTML/CSS, MATLAB

Libraries/Frameworks: PyTorch, TensorFlow, Scikit-learn, FastAPI, React, Tailwind CSS, SwiftUI

Tools/Technologies: Git, GitHub, Azure