Ahmed Mostafa

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Education

University of California, Berkeley **Aug. 2025 - May 2026**
M.Eng. in Electrical Engineering & Computer Science

University of California, San Diego **Sep. 2022 - March 2025**
B.S. in Data Science, Minor in Mathematics *GPA: 4.0/4.0*
Relevant Coursework:
Data Structures & Algorithms, Machine Learning, Systems for Scalable Analytics, Recommender Sys, Responsible Data Science

Experience

Machine Learning Intern **June 2024 – Sep. 2024**
CarsXE *Highland, MD*

- Deployed regression car valuation model aiding customer assessment of vehicle prices, using Streamlit and Sklearn
- Developed automated pipelines integrating multiple **RESTful APIs**, streamlining data for model training
- Performed exploratory data analysis, reducing feature space and memory usage by **54%**, using Seaborn and Pandas

Software Engineering Intern **June 2023 – Sep. 2023**
CarsXE *Highland, MD*

- Developed **full-stack** user monitoring system using Python, implementing analytics to identify growth opportunities
- Engineered API data validation step, enhancing reliability through systematic consistency checks and error handling
- Optimized backend performance by caching dynamic queries, reducing dashboard runtime from **15 min to seconds**

Instructional Assistant **Sep. 2023 – March 2025**
UC San Diego – Halicioglu Data Science Institute *San Diego, CA*

- Tutored **1000+ students**, improving understanding of different machine learning models through discussion sessions
- Utilized students feedback on tutoring session, improving **Java** and Data Structures knowledge retainment
- Created **version control system** project, aiding students to understand Git using simplified write-up approaches

Projects

Radiographic Enhanced Sepsis Detection System — *Python, TensorFlow, AWS, CatBoost, React*

- Utilized chest Xrays & lab test to train an early sepsis detection model achieving **0.88 AUC** using SageMaker
- Processed and integrated MIMIC-IV and MIMIC-CXR datasets using SQL and probabilistic imputation techniques
- Engineered ResNet-50 CNN model achieving **96% recall** for pneumonia by fine-tuning transfer learning architecture
- Deployed model using AWS ECS, automating updates via EventBridge and Lambda for smooth integration

Sepsis Clustering in ICU Patients | *R, PostgreSQL, Docker, Git*

- Replicated a research paper on multimorbidity & sepsis in ICU patients, analyzing **36,000**+ EHRs of MIMIC-III
- Trained latent class analysis to identify patient subgroups, connecting different risks for organ dysfunction and sepsis
- Created network visualization to highlight critical multimorbidity patterns, aiding in subgroups labeling, using ggraph
- Documented reproducibility processes in GitHub, ensuring robust methodologies tracking in the MIMIC-III analysis

League of Legends: Winning Prediction | *Sci-kit learn, Pandas, Numpy, Plotly*

- Implemented a **Random Forest Classifier** to predict match outcomes, using **GridSearchCV** for parameter tuning
- **Achieved a 34% increase to prediction accuracy** by integrating champion-specific statistics and team dynamics
- Discovered that in lane to lane comparisons, support roles have an inverse relationship between kills and win-rate
- Conducted **permutation test** to evaluate model bias across team sides, assessing the fairness of the model

Technical Skills

Languages: Python, Java, SQL, TypeScript
Frameworks: Spark, Dask, TensorFlow, Streamlit, JUnit, GitHub Actions CI/CD
Developer Tools: Git, Docker, VS Code, IntelliJ, Firebase, Jira, Tableau
Libraries: Pandas, NumPy, Plotly, Sklearn, Seaborn, D3.js, Scipy, Keras