

SAFIA BOUTALEB

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EDUCATION

University of California, Los Angeles September 2025 - June 2027
Pursuing Master of Science in Computer Science

University of California, Irvine Graduated June 2025
B.S. Computer Sciences Degree | Information Systems Specialization GPA 3.833, Dean's Honor List (Every Quarter)

Areas of Emphasis: Databases and Web Applications, Intro to Data Management, Graph Algorithms, Machine Learning and Data-Mining, Artificial Intelligence, Information Retrieval, Software Testing/Analysis and Quality Assurance.

PROJECTS

Fabflix – Full-Stack Web Application April 2025 - June 2025

- Developed *full-stack* movie app using *JDBC*, *MySQL*, and *frontend/backend separation* for end-to-end dev.
- Set up cloud deployment via *AWS EC2* with *Tomcat*, *caching*, and *checkout system* for performance and usability.
- Automated *data ingestion* with an *ETL pipeline* for *~50K+ XML* movie records to streamline data consistency.

ZotSearch – Search Engine March 2024 - June 2024

- Developed *search engine* using *TF-IDF scoring* and *cosine similarity* to deliver *relevantly ranked* search results.
- Implemented an *inverted index* using Python's *defaultdict* and *file operations* to retrieve document tokens.
- Integrated *search utility* through *AI summarization* by using *OpenAI's GPT-3.5 API* to generate *result summaries*.

Minesweeper AI March 2024 - June 2024

- Crafted Minesweeper AI with *backtracking* in Python to rank top *10%* in a *300+* participant challenge.
- Enhanced *accuracy* with *probabilistic reasoning* to estimate *mine likelihood*, replacing random guessing of mines.
- Designed *risk detection* with *corner detection algorithms* identifying *high-risk mines* to *boost solver accuracy*.

Custom Memory Allocator January 2024 - March 2024

- Built and tested allocator in *C* within a *Unix* environment, handling *dynamic allocation/deallocation*.
- Implemented algorithms for allocating and deallocating memory blocks, ensuring *alignment* and *proper padding*.
- Designed and implemented *block coalescing logic* for efficient memory management and reduced fragmentation.

PROFESSIONAL EXPERIENCE

DirecTV AI Studio Fellow – Los Angeles, CA August 2024 – December 2024

- Developed *recommendation engine* on IMDb data (*150K+ entries*) with ML models, boosting *RMSE* by *15%*.
- Enhanced *features* with *BERT* embeddings to cluster show overviews, enabling results based on *themes*.
- Boosted *model accuracy* by *18%* ($R^2 = 0.72$) by evaluating *CatBoost* over *Linear Regression* and *Tree Models*.

Undergraduate Student Researcher at UCI - Irvine, CA August 2024 – November 2024

- Detected *loneliness patterns* with *behavioral/physiological data* from *multiple devices* for intervention efforts.
- Enhanced *ML pipeline* reusability by *optimizing legacy code* to *streamline* future model development.

Learning Assistant at UCI - Irvine, CA March 2024 - June 2024

- Explained topics (*OS, compilers, networking*) to *300+* students through office hours to *reinforce understanding*.
- Guided lab work and *debugging* by helping students *troubleshoot code* for *reliability* and *coding practices*.
- Supported students with *6+ hours* of weekly help sessions with *20+ student queues* for student guidance.

EXTRACURRICULARS

Break Through Tech AI Fellow at UCLA – Los Angeles, CA March 2024 – April 2025

- Selected from *3000+* applicants for the *12-month* long Break Through Tech AI program.
- Engaged in *Machine Learning* coursework with Cornell faculty and *mentorship* from industry professionals.

SKILLS

Programming Languages: Java, SQL, Python, C/C++, HTML, CSS, JavaScript, jQuery

Libraries & Frameworks: Maven, Tomcat, Matplotlib, NumPy, Pandas, Scikit-learn, Seaborn, Flask

Applications & Tools: AWS, MySQL, IntelliJ, JDBC, Jupyter, Visual Studio Code, GitHub, Docker