

# Ryan M. Adolfs

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## EDUCATION

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**M.S. in Computer Science**, University of Alabama, *Tuscaloosa, AL* - 3.80 GPA December 2025

**B.S. in Computer Science**, University of Alabama, *Tuscaloosa, AL* - 3.54 GPA May 2024

## EXPERIENCE

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**Machine Learning Dataset Encoder**, University of Alabama Special Collections Library, *Tuscaloosa, AL* Mar 2025 - Dec 2025

- Engineered a Python pipeline to process digitized newspapers into structured preservation metadata, improving archival searchability and downstream database use.
- Generated semantic embeddings from OCR transcriptions and integrated FAISS retrieval with OpenAI APIs to recommend subject headings and create issue-level abstracts.
- Built end-to-end XML ETL and trained a 6-class Linear SVM on 33k XML-derived embeddings to automate document-segment labeling for the metadata pipeline.
- Developed an ALTO-to-DOB XML transformation pipeline that used positional and semantic logic plus ML-based classification to convert incompatible XML files into the in-house format.
- Unlocked large volumes of preexisting archival material for reuse and enabled lower-cost XML sources to feed the pipeline, reducing future manual effort, processing time, and cost.

**Software Engineer**, Blackjack++, *Tuscaloosa, AL* January 2024 - May 2024

- Built a full-stack casino web application with animated Blackjack, slots, and Roulette.
- Created backend using PHP with MySQL for database interactions and AJAX for server-client interactions.
- Designed a responsive and interactive front-end using JavaScript, HTML, and CSS.
- Worked in an Agile development cycle with 4 other people. Held weekly stand-up meetings, writing backlogs, etc.

**Teaching Assistant**, University of Alabama, *Tuscaloosa, AL* September 2023 - May 2024

- Guided students through C programming, debugging, and problem decomposition during lab.
- Delivered real-time code review and essential support to 120+ students in a weekly lab setting.

## PROJECTS

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**Phishing Email Detection** | *Python, Scikit-learn*

- Utilized a dataset of 82,486 emails to train 18 variations of NLP (BOW, TF-IDF, N-grams) and ML techniques (SVM, Logistic Regression, Random Forest) to find an optimal solution for spam detection.
- Found a model that led to 14.6 and 54.3 percent fewer false negatives and positives respectively compared to 2nd place model.

**Baseball Q-Learning Pitch Suggester** | *Python*

- Scraped Baseball Savant for extensive player data and trained a Q-learning agent to recommend pitch sequences.

**Rapid Literature Review: RL vs LLMs for Software Testing**

- Led comparative synthesis; proposed a decision framework mapping method choice to environment dynamics, data availability, compute interpretability, and delivery timelines.

## SKILLS

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**Languages** Python, C++, C, JavaScript, HTML, CSS, PHP, Java

**Tools** Git, GitHub, scikit-learn, Matplotlib, Pandas, Microsoft Office, Linux, Windows

## INVOLVEMENT

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**Alabama Club Baseball** | University of Alabama | 2021 - 2025

**Data Analytics Club** | University of Alabama | Performed Python and SQL modules to acquire data analytics skills | 2023 - 2024