Devin Bowler

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EDUCATION

Bachelors of Science in Computer Science Expected May 2026

University of Massachusetts Amherst, Amherst, Massachusetts

Relevant Coursework: Data Structures & Algorithms, Database Design, Systems Programming, Discrete Math, Statistics, Calculus 1 & 2, and Linear Algebra

EXPERIENCE

Undergraduate Machine Learning Researcher

University of Houston May 2024 - August 2024

- Led a research project focused on integrating and optimizing Large Language Models to elevate code security analysis, achieving significant improvements in vulnerability detection
- Explored various models, including Gemma, LLaMA, RoBERTa, and Phi, applying a sentiment analysis approach to assess generative model outputs, ultimately selecting RoBERTa for its superior classification performance in detecting vulnerable code
- Fine-tuned a RoBERTa model for binary vulnerability classification to enhance the precision of identifying and categorizing code vulnerabilities. Utilized the model's prediction to find specific vulnerability details using a generative language model

SOFTWARE PROJECTS

Machine Learning

Automatic Vulnerability Detection

Research May 2024 - August 2024

- Fine-tuned the RoBERTa model to achieve a 96% F1 score and 1.1% false positive rate, demonstrating effective detection of software vulnerabilities & exploits on unseen data
- Built a Flask-based web application allowing users to upload C/C++ code for automatic vulnerability classification and analysis, identifying risks and categorizing them by type

Full Stack - Visualization

CodeVisualizer

Personal Project December 2024 - Present

- Developed a JavaScript application to generate code visualizations using the Manim library and ChatGPT API, enabling real-time rendering and delivery
- Built a serverless backend using Firebase functions, eliminating the need for manual server management while ensuring scalability
- Integrated a SQL database for efficient storage and retrieval of user-generated visualizations

DevOps Automation

AutoDocker

Personal Project December 2024 - Present

- Engineered a Python CLI tool to automate Dockerfile generation, image building, and container deployment, streamlining DevOps workflows
- Implemented dynamic directory traversal and configuration for containerization of projects
- Automated the build and run process, leveraging Docker CLI for efficient container lifecycle management

TECHNICAL SUMMARY

Languages: Proficient in Python (Flask), Java, & HTML, Experience in, C++, JavaScript (React), C# (Unity), MongoDB and SQL

Software: Git, Linux (Ubuntu, Kali), Jupyter Notebook, Google Colab, VSCode, Docker and Anaconda