Cyril Bou-Harb

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About me: An inspired and relentless computer scientist with a profound passion for AI and ML, continuously advancing my skills through extensive online learning. Eager to dive into SWE or AI/ML roles. Please look at my Github repository for all my projects.

Education

University of Massachusetts Amherst **GPA 3.95 (Commonwealth Honors College)** **Expected Graduation: Dec 2024**

- **B.S. in Computer Science** and **B.S. in Mathematics** (Concentration: Statistics and Data Science)

Coursework: Data Structures and Algorithms, Software Engineering, Artificial Intelligence, Machine Learning, Statistics, Discrete Math, Appl of Data Management, Multivariable Calc, Differential Equations, Ethics & Social Issues in Computing, Applied Linear Algebra, NLP.

Experience

AI Engineer Intern | *FADEL* ***Present***

- Leading the development of a large-scale face detection system for image rights, fine-tuning state of the art models.
- Managing data collection and preprocessing, ensuring diversity in pose, lighting, and facial features. Using tools like OpenCV and Dlib for alignment, cropping, and augmentation.
- Evaluating face detection models, balancing accuracy and efficiency to meet scalability and client requirements.

AI Engineer Intern | *CODE Technologies* ***July 2024 - Aug. 2024***

- Developed a matching system within an app to identify patterns and target individuals for project donations and engagement.
- Leveraged DeepFace's FaceNet model and RetinaFace for high-accuracy facial recognition to verify and identify individuals.
- Automated the web scraping of publicly available data using Selenium and employed NLP-based techniques to create a weighted scoring system, assessing the likelihood of profile matches.
- Achieved an 80-85% accuracy rate in identifying matching profiles, allowing the app to effectively target individuals with personalized outreach strategies, significantly increasing engagement and enhancing the platform's value.

Responsible Computing Research (CSForAll) Intern (*Honors Thesis Project*) | *Professor Nenna Thota* ***Sep. 2023 - Present***

- Engineered an educational game designed to assess and enhance computational thinking (CT) abilities in K-12 students.
- Supported the design and implementation of CT assessments aiming to validate the effectiveness of instructional materials.
- Contributing to a larger NSF-funded project, recognized with a CSForAll award, emphasizing innovation and inclusion in educational technology for young learners.

Software Engineer Intern | *Institute for Applied Life Sciences m-health lab* ***June 2023 - Aug. 2023***

- Designed a web application focused on improving healthcare data quality in Alzheimer's disease research, utilizing Django.
- Achieved a significant increase 74% in survey response rates by integrating the Twilio API for SMS-based data collection.
- Developed an Android app for controlling Vector, an autonomous robot, leveraging real-time data from the accelerometer and gyroscope sensors via Android's Inertial Measurement Unit (IMU) enabling immediate control over Vector's movements.

Projects

Artificial Sign Language (Best Use of an AI Model Hack(H)er413) | Github demo | *Python, TensorFlow, NumPy, OpenCV, MediaPipe*

- Awarded "Best Use of AI" by travelers.com for developing an American Sign Language translator using DL & computer vision (CV).
- Led the creation of a custom dataset of 1,000+ images using computer vision algorithms to track and capture our hand gestures.
- Generated a supervised learning ML model and then optimized it to classify various signs with over 83% accuracy.

Outreach Bot |Github demo | *Node.js, Next.js, Express.js, Postgres, Git, Jira, Heroku, Postman, Apollo API, Vercel*

- Created a full-stack web app to automate collection and filtering of recruiter contact info based on several criteria using Apollo API.
- Implemented unit and integration testing to ensure the reliability and performance of the application, using frameworks like Jest.
- Developed a feature to send personalized outreach messages based on pre-defined templates.
- Increased user engagement and efficiency with automated, personalized communication and mass messaging.

MyAI-ChatGpt | Github demo | *MongoDB, Express.js, React (Vite), Node.js, Postman, OpenAI API, TypeScript*

- Created an end-to-end AI-powered chatbot SaaS application that could simulate complex conversational capabilities.
- Built a ChatGPT clone integrating secure authentication and API functionality showcasing expertise in SDLC and design patterns.
- Implentend a custom authentication system using JWT and cookies, ensuring robust security and a seamless user experience.

Clue Game| Github demo | *C, Vim, Linux*

- Designed a text-based murder mystery game using pointers, structs, linked lists and dynamic allocation in a Linux environment.
- Users can seamlessly move through rooms, pick up/drop items, and move characters to solve the mystery.

Analysis of ML Algorithms on Diverse Datasets | Github demo | *Jupyter Notebooks, NumPy, Matplotlib, Pandas,* Scikit-learn

- Conducted in-depth performance comparison of various machine learning algorithms including Neural Networks, Random Forests, Decision Trees, and K-Nearest Neighbors across four distinct datasets as part of a semester-long project.

Programming Languages: Java, Python, JavaScript, TypeScript, C, C++, SQL, HTML, CSS, R, C#
Frameworks: TensorFlow, Keras, Django, Pandas, NumPy, PyTorch, React, SciPy, Matplotlib, Seaborn, Scikit-learn, Node.js, Next.js
Developer Tools: Git, AWS, Jupyter Notebook, Vim, Docker, Arduino, Android Studio, Agile, Scrum, Jira, Linux, CI/CD
Awards: Chancellor's Award (*UMass*), Certificate of high scholastic achievement (*Phi Kappa Phi*), Best Use of an AI Model (*HackHer*)
Certifications: Machine Learning Specialization (DeepLearnig.AI)