Hany Yacoub

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Education

University of Minnesota - Twin Cities Sep. 2019 – May 2023

B.S in Computer Science | GPA: 3.8 / 4.0

- College of Science and Engineering Dean's List
- Relevant Coursework: Advanced Algorithms and Data Structures, Functional Programming, Parallel Computing, Machine Learning, Software Engineering, Databases
- Teaching assistant for a Java Object-Oriented Programming course of 120+ students

Experience

Target Sep. 2021 – May 2022

Software Engineer - Sponsored Project

- Researched computer vision solutions to build a reverse image search system
- Designed a dataset to test for image skewing and other alterations that may lead to mismatching
- Opted for transfer learning to train a Convolutional Neural Network, achieving an accuracy of 92%
- Added PCA to eliminate features not contributing to accuracy, resulting in a 40% decrease in query time

Nokia Aug. 2021 – Sep. 2021

Software Engineer Intern

- Proposed a customer sentiment analysis solution to team leaders based on marketing department's needs
- Designed and implemented an NLP pipeline to track positive/negative keywords fetched from social media APIs
- Developed a text preprocessor making use of pandas for importing and Spacy for clean-up
- Selected a bag-of-words approach for feature-extraction and training a naive Bayes classifier, achieving an accuracy of 86%
- Optimized the text preprocessor to chunk and parallelize data, decreasing training time by more than 70%

Tech For Good Inc. Jun. 2021 – Aug. 2021

Software Engineer Intern

- Developed a Django RESTful API connected to a PostgreSQL database for a crisis-reporting app, including posting and chatting features
- Used Git for version control and feature-branching and Github projects for issue tracking
- Containerized the backend using Docker, resulting in saved setup time for 8 new developers

Projects

3D Flight Simulator | *C++, Three.js, Docker* Sep. 2021 – Present

- Designed and implemented a physics-based flight simulation with movement and search strategies
- Overhauled a legacy terrain library, resulting in increased usability and reduced page load time by 50%
- Prioritized a full design process including UML, sequence diagrams, and design patterns, which streamlined addition of new features
- Followed the Agile/Scrum methodology, test-driven development, and SOLID design principles

Full-featured Discord Clone | *MongoDB, Express, React, Node.js, MVC Pattern* May 2022 – Aug. 2022

- Built a single-page frontend and managed app-wide state using Redux
- Added authentication using JWT to support friend invitations and room creations
- Implemented real-time chatting with Socket.io and voice/video chat with WebRTC

More on Github: Neural Network from Scratch - Python, Functional Lisp Interpreter - OCaml, Multithreaded HTTP Server - C, Shell from Scratch - C, Battery Display Monitor - C/Assembly

Skills

Languages: Python, Java, C/C++, x86-64 Assembly, OCaml, JavaScript/TypeScript, HTML/CSS, SQL
Web Development: Node.js/Express, Django REST, jQuery, React/Redux, MongoDB, PostgreSQL
Data Science: NumPy, pandas, OpenCV, Spacy
Misc.: Docker, Git, Google Test, JUnit, OpenMP, MPI, Doxygen