Adham Popal

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WORK EXPERIENCE

Airlines Reporting Corporation   **Arlington, VA (Remote)**
Software Engineer Intern   *June 2023-August 2023*
- Spearheaded migration from Jenkins to GitLab CI/CD, enhancing the delivery process for ticketing authority systems through the creation of multiple efficient YAML formatted scripts, separating different development environments.
- Implemented a RESTful API with AWS API Gateway and AWS Lambda, enabling dynamic updates to authorized airline ticket vendors.
- Enhanced efforts in modernizing software by refining and upgrading legacy NestJS components, ensuring system robustness on outdated code segments, containing up to 400 vulnerabilities.
- Leveraged Terraform to implement end-to-end AWS infrastructure deployment for ticketing services, emphasizing security and readability as part of best Infrastructure as Code (IaC) practices.
- Orchestrated a consultative presentation, highlighting practical AI applications, strategic integration areas, and showcasing dependable use cases in marketing, cybersecurity, and human resources.

REI Systems   **Sterling, VA (Remote)**
Software Developer Intern   *May 2022-August 2022*
- Designed and built a real-time data pipeline to evaluate a search engine that was powered by machine learning.
- Researched metrics such as clickthrough rate, quantity of results, and search quality, in order to develop a plan to efficiently calculate and aggregate information in different stages of the data pipeline.
- Actively collaborated in Agile ceremonies including daily standups, sprint planning, and weekly code demos, creating a team environment that prioritized iterative development and collaboration.
- Consolidated AWS Managed Streaming for Apache Kafka Cluster and CloudWatch streams in order to enhance data flow of the data pipeline and improve observability of the end-to-end system.
- Developed Java Spring applications for real-time data transformation and flow of 2000+ NGINX and application server logs between AWS CloudWatch and AWS MSK with final data storage to S3 as a data lake.
- Utilized AWS Glue for search engine metrics, with extract, transform, and load jobs, and streamlined data storage into DynamoDB, for final ingestion by frontend dashboard for visualization of search engine metrics.

George Washington School of Engineering and Applied Science   **Washington D.C. (Onsite)**
Undergraduate Learning Assistant (Operating Systems and Databases)   *August 2023 – May 2024*
- Cultivated a positive learning environment for students by answering their questions about course content and coding assignments in weekly office hours.
- Facilitated labs, ensuring that students develop a critical understanding of concepts covered in lectures.
- Supported class progression by providing direct and timely feedback to professors on student projects and progress.

EDUCATION & SKILLS

George Washington University
B.S. in Computer Science with Minor in Business: 3.95 GPA
- Relevant Courses: Data Structures & Algorithms, Databases, Systems Programming, Operating Systems
- Skills: Java, Python, C/C++, Kotlin, SQL, MongoDB, HTML+CSS, Git+Github, AWS, Agile

PROJECTS

BikeBuddy (Python, React-Native): Python OSMnx graph package and API calls to OpenData D.C. to create customized maps of D.C for safe biking. React-Native to display the city map and returned route based on user input preferences. AWS cloud utilized with lambda functions for route fetching and graph creation with ~7 seconds for route generation.

Straggler Mitigation for Distributed Architecture (Python): Distributed ML training using PyTorch and Ring-Allreduce architecture. Achieved 29% reduction in training time with minimal change in F1 score for credit card fraud dataset. Simulated stragglers were cut and added back to the training loop after aggregation of all functioning worker models.

Microkernel Containers (C): Implementation of containers in xv6 (microkernel operating system). Involved using shared memory with mutex locks to communicate between a server and a client for starting a container with specified constraints of filesystem and system resources. Modification of both kernel and user-level with system calls.

University Registration-Advising (Python[Flask], HTML+CSS, mySQL[AWS RDS]): A Full-Stack University System application. It maintains student records, assigned faculty advisors, and permissions of role actions using Flask framework. Validation of graduation requirements and course registration through course requirements, GPA, credits taken, advising forms, pre-requisites courses, and time conflicts based on different degree types.