Hammad Pathan

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Technical Skills

Languages: Python, C#, TypeScript, JavaScript, Java, C, SQL, HTML, CSS
Libraries/Frameworks: React, .NET, NUnit, Next.JS, Node.JS, Express, FastAPI
Tools: Git, Visual Studio, Azure, SpecFlow, Selenium, Postman, PostgreSQL, MSSQL, Firebase, Supabase, AWS, Docker

Projects

Dynamic Save Game Patcher (Open Source CLI) | *Python, HTTP/Proxy, Binary Manipulation*
- Engineered a CLI tool serving a community of **200,000+** users, handling complex save-file manipulation for dynamic game data.
- Implemented a Man-in-the-Middle (MITM) proxy to intercept game server requests, replicating authentication headers to successfully upload/download modified binary data.
- Reverse-engineered the game's hashing algorithm to implement MD5 integrity checks, ensuring modified data was accepted by the game server.
- Assessed and resolved critical bugs for a live user base, maintaining stability across frequent game patches.

Carfide (Startup Web App) | *Node.js, Express, Supabase, PostgreSQL*
- Designed, built, and owned the entire backend architecture for a startup web application using Node.js, Express, and Supabase.
- Developed scalable RESTful APIs to support core product features and future mobile/web client expansion.
- Architected relational database schemas, optimized Supabase queries, and enforced data integrity in Supabase.
- Implemented secure authentication and authorization using JWT, role-based access control, and protected endpoints.

GradSight (Facial Recognition System) | *Python, OpenCV, AWS, React*
- Architected a computer vision pipeline using OpenCV and EasyOCR to process high-resolution graduation photos, identifying **400+** students with high accuracy.
- Reduced manual tagging labor by **90%** by implementing automated noise reduction, segmentation, and fault-tolerance algorithms.
- Deployed a decoupled architecture - React frontend for user interaction and a Python backend on AWS EC2, using S3 for scalable image storage.

Share-A-Ride (Mobile App) | *Node.js, Express, Firebase*
- Engineered a secure and scalable backend with Node.js and Express, handling user authentication, route handling, and async request processing.
- Integrated Firebase Auth and Firestore for user management and data storage, improving app reliability and security.
- Designed and tested **26** REST API endpoints using Postman, enabling seamless frontend integration with consistent data flow and error handling.

Experience

Software Engineer Intern   **May 2023 – Aug 2024**
Ontario Ministry of Education   *Toronto, ON*
- Built and maintained 3 CI/CD pipelines supporting automated testing, validation, and deployment of business-critical applications, reducing operational risk and manual errors.
- Developed **C#/.NET** application components supporting automated testing infrastructure, emphasizing modular design and reusability while reducing maintenance time by **40%**.
- Engineered Python-based data migration tooling to standardize and validate SQL logic, supporting large-scale system modernization and improving reliability of downstream reporting.
- Translated business and stakeholder requirements into technical implementations in collaboration with cross-functional teams.
- Optimized DAX queries powering risk and performance reporting dashboards, improving loading times for **15+** stakeholder reports and supporting data-driven decision making.

Education

McMaster University   **2025**
Bachelor of Engineering, Software Engineering (Co-op) – GPA: 3.9/4.0   *Hamilton, ON*
- **Relevant Coursework**: Data Structures and Algorithms, Databases, Object Oriented Design, Software Architecture