Abdullah Fazli

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Education

Master of Science in Electrical and Computer Engineering: Software Engineering Spring 2024 - Fall 2025 (CGPA 4.0)
The University of Texas at Austin

Bachelor of Science in Information Technology Spring 2019 - Fall 2022 (CGPA 3.6)
The American University of Afghanistan

Honors and Awards:
- Two President's High Honor Awards for GPA above 3.7
- Two President Honor Awards for GPA above 3.5

Technical Skills

Programming Languages: Python (3 years), C++ (1 year), Java (3 years), JavaScript (3 years), TypeScript (1 year), PHP (Beginner), C (System Programming Knowledge)

Tech Stack by Activity:
- **Data Analysis and Machine Learning:**
  - Scikit-learn, NumPy, Pandas, Supervised ML, Power BI
- **Web Development:**
  - NodeJs, NestJs, VueJs, HTML, CSS, Tailwind, Bootstrap, RESTful APIs, WebSockets
- **Backend Development:**
  - MySQL, PostgreSQL, AWS S3, SQL (3 years), Design Patterns (Singleton, Factory, Observer, etc.), JSON Web Token (JWT) for Authentication
- **DevOps and Version Control:**
  - GitHub, CI/CD pipelines (GitHub Actions), Docker, Agile Methodology, Documentation (Swagger/OpenAPI)
- **System Programming and Operating Systems:**
  - System Programming with C, Windows, Mac OS

Technical Experience

Arbeiter-Samariter-Bund Deutschland (ASB) August 2022 – February 2024 (1.5 Years)

Backend Software Engineer I
- Architected and developed a comprehensive full-stack clinic management system utilizing **NestJs** and **VueJs**, streamlining operations across multiple departments, including patient management, financial tracking, vaccination schedules, and medication administration.
- Engineered and optimized key modules to effectively track patients' health data, enabling healthcare providers to securely access patient histories and improve decision-making efficiency.
- Led the development of an advanced administrative portal with dynamic reporting capabilities, integrating **Chart.js** for real-time data visualization, enhancing the ability of clinic administrators to track performance metrics and make data-driven decisions.
- Implemented robust **role-based access control (RBAC)** for secure management of sensitive patient data, ensuring compliance with healthcare privacy standards such as HIPAA, and minimizing unauthorized access to critical information.
- Deployed secure authentication mechanisms using **JWT (JSON Web Tokens)**, providing seamless user login, session management, and data encryption for enhanced security across the system.
- Leveraged modern software architecture principles such as **Model-View-Controller (MVC)**, **Dependency Injection**, and **Factory Design Pattern**, ensuring scalability, modularity, and maintainability of the codebase.

- Orchestrated automated CI/CD pipelines using **GitHub Actions**, enabling continuous integration and delivery with a focus on test-driven development, employing **Jest** for unit testing to ensure high-quality, reliable software releases.
- Integrated **AWS S3** for secure and scalable multimedia storage, utilizing the **aws-sdk** to efficiently manage and serve patient documents and imaging files, significantly improving system performance and storage scalability.

Black Ace Software Solution Company **Dec 2022 – Feb 2022 (3 Months)**

Software Development Intern
- Spearheaded the development of a full-stack, dynamic website for a goods delivery company, leveraging modern technologies including **NestJs**, **MySQL**, **TypeORM**, and **Amazon S3** for robust data and media storage management, with **Vite** to optimize build and development processes.
- Engineered the front-end using **VueJs**, implementing advanced data handling and state management via **Pinia**, ensuring a smooth user experience and responsive interface.
- Integrated secure and scalable authentication mechanisms using **Auth0**, streamlining login processes and enhancing data protection through industry-standard OAuth2 protocols and JWT-based authorization.
- Collaborated in cross-functional Agile teams to design and develop an administrative dashboard enabling real-time management of content and operational data, delivering critical insights for decision-makers.
- Implemented a comprehensive authentication system utilizing JWTs for secure API access, incorporating rate-limiting through **@nestjs/throttler** to prevent brute-force attacks, thereby enhancing security and system resilience.
- Established a seamless CI/CD pipeline using **GitHub Actions**, automating testing (unit tests via **Jest**) and deployment workflows, significantly reducing manual intervention and accelerating time-to-market.
- Managed integration with **Amazon S3** to store and serve multimedia files efficiently, utilizing advanced cloud storage techniques for scalability and performance optimization.

The American University Suleimani Kurdistan **August 2021 – Nov 2022 (1.5 Years)**

Contract Software Developer for Institutional Effectiveness Department
- Developed a full-stack course assessment system using Django and React.
- Automated course review assignments for reviewers based on role-based authentication.
- Enhanced data accessibility by transitioning from paper-based reviews to an online platform, improving user satisfaction by 40%.

Eagle Wise Chartered Accountants Company **Jun 2018 – Nov 2018**

IT Technician
- Provided technical support for hardware, software, and network issues.
- Managed IT assets and performed system installations and maintenance.
- Assisted in network administration tasks and user account management.

Projects

Robotic Control Implementation using the ATmega328P Microcontroller

Overview: Developed an end-to-end robotic control system integrating multiple sensors and actuators, featuring real-time navigation and collision avoidance capabilities using the **ATmega328P Microcontroller** and **C/C++** code. The system was designed to optimize signal processing and feedback control for efficient mechanical hardware management.

Key Functions:
- **Navigation and Collision Avoidance Algorithms:** Designed, simulated, and implemented sophisticated algorithms for real-time navigation, using sensor inputs from multiple sources (Ultrasonic, Infrared, LIDAR, GPS, Accelerometer, Gyroscope) to detect and avoid obstacles.

- **Real-Time Signal Processing and Feedback Control:** Processed real-time data from various sensors to control mechanical functions such as steering and speed through numerical feedback loops.

Hardware Specifications:

- Microcontroller: **ATmega328P**
- Clock Speed: 16 MHz
- RAM: 2 KB SRAM
- Signal Sampling Rates: Typically 10-100 Hz based on sensor input
- Numerical Precision: 8-bit data processing optimized for performance
- I/O Interface: GPIO for sensor inputs and actuator outputs

Code Implementation and Control Architectures:

- Developed in **C/C++**, focusing on procedural logic flow, I/O management, and efficient resource handling for real-time signal processing.
- Implemented feedback control loops using numerical control architectures, optimizing transient response parameters such as rise time and settling time through second-order transfer functions and feedback compensation.
- Utilized discrete transfer functions with numerical poles and zeros to fine-tune the transient response for optimal control over mechanical functions.
- Optimized hardware resource management and implemented a scalable architecture for real-time data processing and control.

Generative Adversarial Networks (GANs)

- Implemented various GAN architectures (Vanilla GAN, CGAN, WGAN, DCGAN) for image generation.
- Used DCGAN with ReLU and Sigmoid functions for high-quality image generation.

Library Management System (PHP, SQL)

- Developed a library management system recognized as the winning project at the American University of Afghanistan's IT Day.
- Implemented book tracking, PDF uploads, and an administrative dashboard for library operations.

Relevant Coursework

- Statistical Machine Learning
- Distributed Systems
- Systems Programming
- Software Modeling

Leadership and Management

- US Consulate and 51Labs Leadership and Entrepreneurship Training Certificate
- Managed the 6th annual IT Day at the American University of Afghanistan