

Mahmoud Abdrabbou
< Software Engineer, Full Stack Developer />
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[GitHub](#) | [LinkedIn](#) | [Leetcode](#) | [Portfolio](#)

Professional Summary

A Software Engineer with a proven track record in full-stack development and AI integration. Led the development of multiple projects like VisionAID for the IEEE, StreamHUB and BASYS, reducing operation time from 48 hours to under 25 seconds and achieving a 95% performance improvement through innovative algorithms and automation. Developed AI-powered applications, including VisionAid for visually impaired users and StreamHUB with advanced recommender systems. Expert in Java, Python, JavaScript, React.js, Node.js, and database management. Graduated with honors from Al Ain University with a 3.81 CGPA and recipient of many awards for academic excellence. Committed to delivering scalable, user-centric solutions in fast-paced environments.

Technical Skills

- **Programming:** Java, Python, JavaScript, Dart, PHP, SQL, Matlab.
- **Web Development:** HTML, CSS, JavaScript, Typescript, Bootstrap, REST API's.
- **Frameworks/Libraries:** React.js, Node.js, Express.js, Spring boot, Flask, Flutter, Pytorch, Torchvision, Scikit learn.
- **Databases:** MySQL, PostgreSQL, MongoDB.
- **Tools:** Git, GitHub, Postman, Docker.
- **Cloud Technologies:** AWS, Kubernetes.
- **UI/UX:** Figma, Bootstrap Studio, Spline.
- **Misc:** Google(operators, queries), Prompt Engineering, Data modelling, Developer tools, Agile Development and Scrum.

Experience

Institute of Electrical and Electronics Engineers
Software Engineer | Full Stack & AI/ML

UAE – Abu Dhabi
February 2025 – Present

- **Engineered VisionAid**, a sophisticated mobile application for visually impaired users, leveraging Flutter, Python, PyTorch, OpenCV, and MySQL to deliver real-time computer vision capabilities, including object recognition and hazard detection with 92% precision across diverse environments.
- **Architected a multi-modal AI pipeline** integrating Microsoft COCO for object detection, KITTI for 3D hazard analysis, Places365 for contextual scene understanding, and SynthText for OCR, enabling seamless text-to-speech feedback in English for 100+ simulated users.
- **Optimized WebSocket-based communication** for low-latency audio alerts, reducing response time by 40% and ensuring real-time safety notifications for obstacles like stairs and vehicles.
- **Led cross-functional collaboration** to design an accessibility-first UI with voice commands and large-button navigation, achieving a 95% user satisfaction rate in usability testing and setting a benchmark for inclusive design.
- **Delivered comprehensive technical documentation** and a professional-grade user manual, streamlining deployment and earning commendations from IEEE stakeholders for clarity and innovation.

Federal Transformers Company LLC
Software Engineer in the Software Development Team

UAE – Abu Dhabi
September 2024 – March 2025

- **Revolutionized Attendance Tracking:** Spearheaded and was team leader in the design and development of BASYS (Biometric Attendance System)—an advanced HR attendance management solution built with JavaScript, Bootstrap, Python, Node, Express, MySQL, HTML, and CSS—that integrates real-time tracking, dynamic shift scheduling, and overtime management, cutting critical operation time from 2 days to under 25 seconds.
- **Data-Driven Reporting Enhancements:** Engineered and deployed customizable reporting features with multi-format exports (PDF, Excel), empowering management with rapid, actionable insights.
- **Seamless Systems Integration:** Orchestrated the integration of the biometric platform with diverse HR systems and state-of-the-art biometric devices, ensuring 99.9% data accuracy and uninterrupted operation.
- **Performance Optimization & Scalability:** Innovated new algorithms and streamlined processing pipelines, boosting system reliability and scaling performance by over 95%.
- **Process Improvement Leadership:** Proactively identified system bottlenecks and implemented automation solutions that enhanced workflow efficiency and set new benchmarks for operational excellence.

Projects

- **VisionAid - (Cross Platform Mobile App with Multi-Modal AI Pipeline Vision detection) | [LINK](#)**

Python | Flask | PyTorch | Torchvision | MySQL | Flutter | WebSockets | OpenCV

Cross-platform visual assistance system with multi-modal AI pipeline, utilizing real-time object detection, scene analysis, OCR, and hazard alerts, with voice commands, text to speech, product and currency identification and .

Engineered a Flutter-based mobile app for Android/iOS, integrated with Python Flask backend for seamless cross-platform functionality. Developed real-time object recognition and hazard detection using PyTorch models trained on Microsoft COCO and KITTI datasets. Implemented on-click scene description (Places365) and OCR (SynthText) with text-to-speech feedback. Designed an accessibility-first UI with voice commands, large-button navigation, and tutorial modes. Utilized WebSockets for low-latency communication between the app and backend, ensuring real-time audio alerts for hazards. Built a MySQL database for synchronized user preferences and secure data storage. Adhered to IEEE criteria with robust documentation, ethical data practices, and compliance with dataset licenses.

- **StreamHUB - (AI-powered Movie Streaming Platform) | [LINK](#)**

Python | Bootstrap | HTML | CSS | JavaScript | Node.js | Express.js | MySQL | Flask | Pandas | SciKit Learn

Movie Streaming system with Social Media-features and AI recommender systems.

Engineered a multifaceted content management and social media integration platform. Developed and implemented client and server media streaming and content-based and item-based filtering AI recommender systems to enhance user experience with personalized content suggestions. Integrated features for real-time chatting, forums, and community creation and management to foster user engagement. Built comprehensive admin views for content moderation, user management, and system configuration, ensuring secure and scalable operations. Delivered a seamless, high-performance solution with robust API support and adherence to stringent security and usability standards.

- **BASYS - (Biometric Attendance System) | [LINK](#)**

JavaScript | Bootstrap | Python | Node | Express | MySQL | HTML | CSS

HR attendance management system to track, view, visualize, edit, and print attendance related data.

Designed and implemented a comprehensive biometric attendance tracking system. Developed real-time tracking, shift scheduling, and overtime management features; generated and exported customizable reports in various formats (PDF, Excel); integrated with HR systems and biometric devices; delivered a highly reliable, scalable, and user-friendly solution. Main Features include: multiple report generation and data visualization, email notification,

Education

Al Ain University

Bachelor of Science in Software Engineering (Honors) - ABET Accredited

Abu Dhabi UAE - Graduated on 2025/Feb

CGPA of 3.81/4 (Grade: Excellent)

- Acquired the UAE Golden Visa for distinguished students' category.
- Recipient of a full-ride 100% scholarship in AAU for achieving 100% in high school report and being among the five highest-ranking high school students in the nation.
- Awarded the Al Ain University's honor list and the College of Engineering's honor list as well as the Dean's Honor list for 5 consecutive semesters till graduation.

Activities:

- Winner in the UAE National Country-Wide Scientific Excellence Competition.
- Membership of Institute of Electrical and Electronics Engineers(IEEE).
- IEEE Software Engineering Category Competition Participant.
- 5th Place in university Chess yearly tournament
- Volunteer in the 23rd IEEE ACIT 22 conference (The 23rd International Arab Conference on Information Technology) as part of the registration team and organizing team of the conference.
- Finalist in Expo innovation programme
- Finalist in Sundouq al Watan youth startup competition.
- Participated in many workshops on Troubleshooting and Cloud Computing, and Open-Vino as AI inference for multi-vendor HW and Arduino Workshop.
- Winner in university conducted Programming Day's Competitions.