

Ibrahim Saad

📍 Baghdad, Iraq ✉ ibrsaa1017@gmail.com ☎ +964 773 206 2490 📞 1017-7

Summary

Mechatronics Engineer with expertise in multidisciplinary projects integrating mechanical design, PCB-based electrical systems, and software development. Demonstrated success in building autonomous robotic control systems and automating government processes, delivering end-to-end solutions from concept to deployment. Proven leader in managing cross-functional technical teams and bridging hardware-software integration to create scalable, reliable engineering systems.

Education

University of Baghdad – *Bachelor of Science in Mechatronics Engineering* *Nov 2021 – Jun 2025*

- **Relevant Coursework:** Control Systems, Embedded Systems, Robotics, Machine Learning for Engineers, Sensors & Instrumentation, PLC Programming, Thermodynamics & Heat Transfer, Mechanical Design, Circuit Design
- Designed robotic arm simulation in Unity with computer vision hand-tracking system to test inverse kinematics algorithms before physical implementation on industrial robotic arm
- Developed autonomous lumbar puncture and epidural injection robot using JAKA Zu robotic arm with tissue classification based on force-displacement analysis

Experience

Technical Project Manager *Baghdad, Iraq Aug 2024 – Present*
Qi Card

- Lead cross-functional team of 5 developers (2 frontend, 1 backend, 1 software engineer, 1 additional developer) across multiple government automation programs
- Architect and develop full-stack solutions with focus on backend using C# ASP.NET Core 8 and Vue.js 3/Nuxt.js
- Manage government relations and requirements acquisition for Ministry of Labor and Social Affairs management system
- Design system architecture and coordinate sprint planning, code reviews, and deployment strategies

Head of Maintenance Department *Baghdad, Iraq Sep 2023 – Aug 2024*
RoboIraq

- Diagnosed and resolved complex robotic vacuum cleaner issues achieving 90% success rate through innovative low-cost solutions
- Engineered workarounds for manufacturing defects without software modifications, reducing warranty costs by 30%
- Recruited, trained, and supervised maintenance technicians, developing diagnostic protocols and repair procedures
- Managed distributor relationships (including Marvel) and directly handled customer service, generating over 40M IQD in sales

Academic Projects Collaborator *Baghdad, Iraq Jun 2022 – Sep 2023*
University of Sawa

- Advised master's degree candidates on mechatronics and robotics research projects
- Co-authored patent applications to enhance university research ranking
- Collaborated with PhD-level researchers from Al-Mustansiriya University on defense technology projects

Key Projects

Multi-Axis Robotic Arm for Lumbar Puncture & Epidural Steroid Injection

[Documentation](#) 

- Developed autonomous 6-DOF robotic system reducing procedure time from 20 minutes to 2 minutes with 0% paralysis risk
- Implemented computer vision system for patient positioning and real-time tissue classification using Random Forest and RBF kernel algorithms
- Achieved 97% accuracy in tissue layer classification and 99% procedure success rate across test trials
- **Technologies:** C++, Python, Computer Vision, Machine Learning, Force Sensing, JAKA Zu Robot

Computer Vision-Based Robotic Arm Control System

- Created Unity simulation environment to test inverse kinematics algorithms before industrial deployment
- Developed hand-tracking system using Python to capture 3D joint positions and calculate palm center of geometry
- Implemented dual-camera system for XYZ position tracking with real-time inverse kinematics calculations for 3-DOF control
- **Technologies:** Unity, Python, Computer Vision, Inverse Kinematics, OpenCV

Ministry of Labor & Social Affairs Management System

- Led full-stack development team to digitize and automate departmental workflows and legal procedures
- Conducted requirements gathering with government stakeholders and designed scalable system architecture
- Developed backend services using C# ASP.NET Core 8 with SQL Server database and Vue.js frontend
- **Technologies:** C#, ASP.NET Core 8, Vue.js 3, Microsoft SQL Server, RESTful APIs

Magnetic IED Detection Systems

- Designed checkpoint device utilizing IMU sensors to detect magnetic anomalies with automatic threat reporting to centralized system
- Developed Android application leveraging phone's IMU and compass sensors for real-time magnetic field spike detection with 4G alerts
- Collaborated with Al-Mustansiriya University professors on signal processing algorithms
- **Technologies:** C++, Python, Java, Android, IMU Sensors, 4G Communication

GPS-Denied Navigation Device for Military Applications

- Engineered backup navigation system for soldiers operating in EMP-affected environments
- Implemented dead reckoning algorithm using wheel rotation sensors and compass heading with integrated offline mapping
- **Technologies:** Embedded C, GPS, IMU, Dead Reckoning Algorithms

Publications

Multi-Axis Lumbar Puncture and Epidural Steroid Injection with Layer Classification

Expected Jul 2025

First-of-its-kind research on 6-axis robotic lumbar puncture procedure with autonomous tissue classification. Manuscript in preparation for submission to Frontiers in Robotics and AI.

Technical Skills

Programming Languages: C++, C, C#, Embedded C, Python, Java, SQL, JavaScript

Frameworks & Technologies: ASP.NET Core, Vue.js, Nuxt.js, Unity, OpenCV, ROS (Robot Operating System)

Tools & Platforms: Microsoft SQL Server, Git, Linux, PLC Programming, PCB Design, CAD (SolidWorks/Fusion 360)

Engineering Specialties: Robotics Control Systems, Computer Vision, Machine Learning, Embedded Systems, Sensor Integration, Inverse Kinematics, Full-Stack Development