

MOHAMMED MAHYOUB

Senior ITS & Systems Integration Engineer | Applied AI & Computer Vision

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PROFESSIONAL SUMMARY

Senior Service Engineer with 14 years of multidisciplinary engineering experience, including over 7 years at VITRONIC Machine Vision supporting intelligent transportation, smart infrastructure and traffic-enforcement systems across the UAE. I work across the full system lifecycle: integrating cameras, LiDAR, sensors, controllers, networks, databases and backend platforms; running FAT/SAT, commissioning, calibration and performance verification; and resolving cross-layer faults through structured root-cause analysis. Currently pursuing an MSc in Artificial Intelligence at UWE Bristol, applying machine learning and computer vision to transportation problems with a focus on data quality, leakage-controlled evaluation and efficient neural networks.

KEY ACHIEVEMENTS

- 800+ intelligent transportation and traffic-enforcement systems supported across the UAE, with service assignments in 6 countries: UAE, Saudi Arabia, Oman, Rwanda, Erbil (Iraq) and Kenya.
- Promoted from Service Engineer to Senior Service Engineer in December 2024 after five years at VITRONIC Machine Vision.
- Certificate of Appreciation from Dubai Police HQ (2023) for technical contribution and continuous support in improving the performance of intelligent traffic-enforcement systems.
- MSc vehicle-classification study: audited 4,356 images and found 55.67% were exact duplicates; under leakage-controlled evaluation the Standard CNN scored Macro-F1 0.8526 versus 0.9835 on the image-level protocol with duplicates retained (a diagnostic protocol comparison).
- Efficient CNN (depthwise-separable convolutions) cut trainable parameters by 87.24% and MACs by 81.67% versus the Standard CNN, with 18.32% lower GPU batch-one latency and a mean Macro-F1 only 0.0150 lower; Grad-CAM used to inspect model attention.
- Built and flight-tested an autonomous quadcopter (team project) and an RGB-D mapping rover; archived an NGSIM US-101 vehicle-classification study with a DOI.

CORE EXPERTISE

ITS & Smart Infrastructure: Intelligent Transportation Systems, Traffic Enforcement, Systems Integration, Camera Systems, LiDAR & Sensor Integration, Machine Vision

Testing & Operations: FAT / SAT, Commissioning, Calibration, Interface Validation, Performance Verification, Root-Cause Analysis, Technical Documentation

AI & Computer Vision: Python, PyTorch, scikit-learn, Pandas, CNNs, Grad-CAM, Model Evaluation, Data Preprocessing, Feature Engineering

Networks & Platforms: Cisco, MikroTik, Ubiquiti, Routing & Switching, MPLS, OSPF, BGP, VPN & Firewalls, VoIP/IMS (SIP, VoLTE), VMware ESXi, iSCSI, Active Directory, Citrix XenApp, Exchange, GNS3, OPNET

Embedded & Automation: PIC / AVR / Arduino, Embedded C (mikroC), PLC, RFID, VB.NET, Hardware Debugging, ArduPilot / MAVLink, PID Tuning

PROFESSIONAL EXPERIENCE

Service Engineer / Senior Service Engineer - Smart Infrastructure & ITS Systems

VITRONIC Machine Vision | UAE | Oct 2019 - Present

Senior Service Engineer - Smart Infrastructure & ITS Systems (Dec 2024 - Present)

- Integrate cameras, LiDAR, sensors, controllers, networks, databases and backend platforms into reliable ITS and traffic-enforcement systems.
- Perform FAT/SAT, commissioning, calibration, interface validation and performance verification.
- Diagnose complex hardware, software, communication and database faults using structured root-cause analysis.
- Coordinate incident resolution, preventive maintenance, upgrades and configuration changes with customers, vendors and software teams.
- Prepare test records, technical reports, incident analyses and handover documentation.

Service Engineer - Smart Infrastructure & ITS Systems (Oct 2019 - Nov 2024)

- Installed, integrated, commissioned and supported intelligent transportation and traffic-enforcement systems.
- Worked across cameras, LiDAR, sensors, controllers, networks and backend interfaces.
- Performed calibration, functional testing, acceptance activities, preventive maintenance and fault diagnosis.
- Prepared service reports, test records and technical documentation; coordinated technical support with customers and engineering teams.

Across my service: 800+ systems supported in the UAE, with service assignments in the UAE (including Abu Dhabi and Dubai), Saudi Arabia, Oman, Rwanda, Erbil in Iraq and Kenya.

Electronics, Embedded Systems & Automation Engineer

Electronic Science Company | Al Hudaydah, Yemen | Jun 2015 - Aug 2019

- Designed, assembled, tested and troubleshoot electronic circuits, embedded control systems and sensor-based automation.
- Programmed PIC, AVR and Arduino microcontrollers; integrated sensors, displays, communication modules, controllers and PLCs.
- Performed PCB prototyping, hardware debugging, functional testing and technical validation.
- Developed VB.NET desktop applications for monitoring, diagnostics, reporting and workflow automation, with deployment and customer support.

Independent Engineering Consultant - Network Infrastructure & Technical Projects

Independent Engineering Projects | Self-employed / Project-based | Mar 2012 - May 2015

- Designed and supported wired and wireless infrastructure using routing, switching, firewall, VPN, MikroTik and Ubiquiti, including coverage and point-to-point link planning.
- Designed, built and validated MPLS, OSPF, BGP, VRF and traffic-engineering architectures using Cisco platforms and GNS3.
- Designed and deployed photovoltaic power systems with battery storage and inverters, including solar supply for remote telecommunications sites.
- Developed engineering tools for RF calculations and reporting; prepared network diagrams, configurations and technical documentation.

SELECTED ENGINEERING PROJECTS

ITS Systems Integration & Traffic Enforcement Support - Integration, commissioning, calibration and fault isolation across field and backend systems; 800+ systems supported across the UAE (details anonymised).

Efficient Neural Network Architectures for Vehicle Type Classification - PyTorch, four architectures, leakage-controlled evaluation and Grad-CAM. Public software: DOI 10.5281/zenodo.23524699 (all versions).

Vehicle Type Classification Using NGSIM US-101 - Archived publication: DOI 10.5281/zenodo.23033235.

Autonomous Quadcopter UAV - Flight Control, Telemetry & FPV (team project) - DJI F450 airframe with APM 2.6 flight controller, GPS/compass, sonar and optical flow; 433 MHz telemetry and 5.8 GHz FPV; sensor calibration, PID tuning, flight modes and failsafes; built and flight-tested.

Reconnaissance Robot - RGB-D Mapping & Remote Control - End-to-end build: Kinect RGB-D mapping (RTAB-Map on Linux), ultrasonic sensing, GPS/GSM reporting, XBee telemetry and remote control.

PIC-Based Equipment Room Monitoring & Control System - PIC/EEPROM implementation media, integrated reference design and verified control model; full hardware commissioning is not asserted.

Engineering Operations Suite - Monitoring, Diagnostics & Service Management - Two independent VB.NET applications; shared-data integration and automated hand-off are proposed designs.

Software-Defined Networking - Automation & Video Streaming (team project)

Software-Defined Data Center (SDDC) - Design & Implementation (team project)

IMS Multimedia Services - VoIP, IPTV & VoLTE (team project)

Network Infrastructure Design - MPLS Backbone

Enterprise Wireless & Network Infrastructure Architecture

Wireless Link Planning & RF Engineering - Historical implementation; subsequent RF review.

Industrial Automation & PLC-Based Control Systems

RFID Library Automation System (ISO 15693)

Solar Energy Systems - Design, Sizing & Deployment

EDUCATION

MSc Artificial Intelligence | University of the West of England (UWE Bristol)

Jun 2026 - Expected May 2028 | In progress - machine learning, neural networks and computer vision

Bachelor's Degree in Electrical Engineering - Communications & Electronics | Sana'a University

Sep 2012 - Jun 2017 | UAE Ministry of Education degree equivalency obtained

CERTIFICATIONS & RECOGNITION

- Certificate of Appreciation - Dubai Police HQ, UAE (2023)
- Cisco CCNA Routing & Switching (Apr 2019) and CompTIA A+ (Dec 2019), both previously earned
- PIC Microcontroller Programming - mikroC & Proteus (training)

TECHNOLOGIES & LANGUAGES

Languages: Arabic (Native / Bilingual) | English (Professional Working Proficiency)