

ASHWIN VARDHARAJAN

Senior Developer | Autonomous Systems Engineer | Technical Consultant

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[Portfolio](#) | [GitHub](#) | [LinkedIn](#)

PROFESSIONAL SUMMARY

Senior Developer, Autonomous Systems Engineer and Technical Consultant with 2+ years of industry experience across real-time industrial systems, MES platforms, robotics, autonomous navigation and full-stack SaaS delivery. MSc Data Science & Analytics graduate with Distinction (Feb 2026). Strong hands-on capability in Python, C#, ROS/ROS2, FastAPI, Next.js, SQL Server, PostgreSQL, sensor fusion, perception pipelines, manufacturing systems and production-grade software engineering.

TECHNICAL SKILLS

Programming & Backend	Python, C#, SQL, R, FastAPI, ASP.NET, REST APIs
Frontend & SaaS	Next.js, React, responsive UI, dashboards, role-based web applications
Robotics & Autonomy	ROS/ROS2, Gazebo, Carla, sensor fusion, localization, navigation, Kalman filters
AI / Computer Vision	TensorFlow, Keras, Scikit-learn, OpenCV, CNNs, DQNs, object detection, tracking
MES & Industrial	MES integration, PLC integration, SQL Server, WPF, WinForms, downtime systems, OEE dashboards
Data, Cloud & Tools	PostgreSQL, Pandas, NumPy, Power BI, Tableau, Git, Bitbucket, Kubernetes, Vercel

PROFESSIONAL EXPERIENCE

Senior Developer - UH Racing Autonomous, University of Hertfordshire | Hatfield, UK | Jan 2024 - Oct 2025

- Designed and implemented ROS/ROS2-based perception, localization and navigation pipelines for autonomous vehicle prototypes, integrating sensor fusion, CNN-based perception and Kalman filtering.
- Improved localization accuracy by approximately 25% through sensor-fusion tuning and validation across Carla and Gazebo simulation environments.
- Built modular simulation and testing workflows to evaluate perception and navigation behavior under race-like constraints and real-time operating conditions.
- Led real-time debugging and on-track testing, diagnosing perception, control and integration failures to stabilize autonomous behavior.
- Collaborated with controls, hardware and planning subteams to align software architecture with vehicle-level constraints and race-day requirements.

MES Integrator & Developer - Continental Automotive | Bangalore, India | Nov 2021 - Sept 2023

- Designed and deployed MES solutions using C#, WPF and SQL Server across automotive manufacturing environments and production-line workflows.
- Created WPF applications and plugins that reduced downtime by approximately 20% and improved process transparency for plant teams.
- Integrated MES applications with industrial PLC networks to improve cross-platform data reliability, traceability and automation efficiency.
- Coordinated with IT MA and central engineering teams to pilot, validate and deploy global MES solutions in line with corporate standards.
- Authored technical documentation, user guides and training materials to support adoption of MES applications across manufacturing teams.

AI Intern - Anavadhya Softech Pvt. Ltd. | Bangalore, India | Jan 2020 - Jul 2020

- Built an AI-driven chatbot prototype in Python using NLTK and spaCy for intent classification, entity extraction and response matching.
- Engineered Pandas-based preprocessing pipelines for conversation logs, improving model-training efficiency by approximately 40%.
- Integrated chatbot backend workflows with SQL Server to fetch user profiles and automate support-ticket creation, reducing manual routing by approximately 30%.

SELECTED PROJECTS

FlowMES - Real-Time MES SaaS Platform | *FastAPI, Next.js, PostgreSQL, MQTT, WebSockets, Python*

- Built a real-time MES-lite platform for SME factories covering live machine monitoring, downtime tracking, OEE visibility, production planning, maintenance and AI-assisted operational insights.
- Developed dashboard-first workflows for factory owners and production teams to move from Excel/WhatsApp reporting to centralized real-time visibility.

Real-Time Production Downtime Notifier | *C#, ASP.NET, SQL Server, WinForms*

- Developed a real-time alerting system to monitor, report and escalate production downtime in live manufacturing environments.
- Built backend services with ASP.NET and SQL Server plus a WinForms operator interface, using low-latency alert logic for production teams.

Autonomous Navigation Pipeline | *Python, OpenCV, ROS/ROS2, Carla, TensorFlow*

- Built an end-to-end autonomy pipeline covering perception, localization and navigation with CNN-based object detection and Kalman-filter-based state estimation.
- Integrated and validated modules using Carla simulation, tuning for robustness, temporal stability and debugging through ROS tooling and simulation logs.

FIAS Global Holdings LTD - Live Client Website | *Next.js, React, Vercel, SEO*

- Designed and deployed a premium corporate website for a UK-based holding and corporate services company, covering responsive UI, SEO, contact workflows and production deployment.

EDUCATION

MSc Data Science & Analytics - University of Hertfordshire | Hatfield, UK | Completed Feb 2026

- Result: Distinction.
- Dissertation: Data-driven Approaches for Object Detection, Tracking and Navigation in Autonomous Vehicles.