WAN MUHAMMAD HAFEEZ BIN WAN AZREE, Ts.

System Engineering Manager | Autonomous Vehicle & Robotics Specialist

Professional Technologist (Ts.) — Malaysia Board of Technologists (MBOT)

No. 33A, Jalan KB 2/3 Kota Bidari, Bandar Country Homes, 48000 Rawang, Selangor | +6010-5636371 | wafeez_08@yahoo.com

PROFESSIONAL SUMMARY

Certified **Professional Technologist (Ts.)** and System Engineering Manager with over **7 years of progressive experience** in developing autonomous vehicles and full-stack autonomous robot solutions. Proven track record of advancing from engineer to manager, leading multi-disciplinary teams, and delivering production-grade AV systems from concept to commissioning. Specialised in autonomous navigation — 2D SLAM, 3D SLAM and VSLAM — together with path-planning systems (A*, TEB, TESC), sensor fusion and system integration.

Proud member of the *Advanced Vehicle System Engineering Research Group (Universiti Teknologi Malaysia)*, with educational and professional collaborations across Japan, Singapore, Finland and Malaysia. Currently pursuing a PhD in advanced autonomous systems at MJIIT, UTM, while actively expanding expertise in AI-driven SLAM and next-generation autonomous mobility.

CORE COMPETENCIES

Autonomous Navigation

2D / 3D / Visual SLAM • LiDAR & IMU Calibration • NDT & LOAM Mapping • A*, TEB, TESC Path Planning • High-Speed Localisation (up to 60 km/h)

System Engineering & Integration

Sensor Fusion • Full-Stack AV Architecture • Mission Planner Design • Multi-Floor Navigation • Auto-Docking Systems • V-Model Verification

Software & Tools

C / C++ • Python • Verilog • Assembly • ROS • DDS • Point Cloud Library • MATLAB • Docker • Git • JIRA

Leadership & Delivery

Team Management • Cross-Functional Collaboration • Stakeholder Engagement • Agile / JIRA Workflows • Technical Roadmapping • Mentorship

PROFESSIONAL EXPERIENCE

System Engineering Manager • eMooVit Technology Sdn. Bhd., Cyberjaya, Malaysia *2025 – Present*

Leading the System Engineering function for autonomous electric vehicle (AEV) production programmes.

- **Set** — strategic direction for the System Engineering department, aligning AV development roadmaps with overall company vision and customer commitments.
- **Own** — end-to-end AEV product lifecycle — from concept design and architecture definition through procurement, integration, verification and commissioning hand-over.
- **Manage** — multi-disciplinary teams across mechanical, electrical, software and AI to deliver autonomous bus and shuttle platforms (AEVBUS GEN2 programme).
- **Establish** — System Technical Requirement Specifications (StRS), System Requirement Specifications (SRS) and Architecture Definitions (AD) for new vehicle units.
- **Drive** — partnerships with OEMs, certification bodies (JPJ, APAD, Puspakom, MITI) and international suppliers on homologation, R100/R89 compliance and VTA approvals.

- **Govern** — project KPIs, budgets and resource planning via JIRA-based agile workflows; report progress directly to executive leadership.
- **Mentor** — the next generation of AV engineers through structured technical mentorship and competency frameworks.

Lead Engineer — Autonomous Vehicle • eMooVit Technology Sdn. Bhd., Cyberjaya, Malaysia *2023 – Early 2025*

Technical lead for end-to-end AV system delivery across multiple vehicle platforms.

- **Led** — the AV engineering squad covering perception, localisation, planning and control — accountable for sprint planning, code quality and release readiness.
- **Architected** — AV integration on a diverse vehicle fleet — 7-seater vehicle, 4-seater vehicle, POD, buggy, jeep, tractor, track robot and small-to-medium autonomous mobile robots.
- **Owned** — Functional & Safety Tests, Scenario Tests (real-world), FAT validation and endurance testing as part of formal verification campaigns.
- **Spearheaded** — the eMooVit LITE solution — a full-stack autonomous capability optimised to run on low-spec compute, expanding the addressable market for cost-sensitive deployments.
- **Defined** — sensor calibration, network synchronisation and module integration standards adopted across all customer programmes.
- **Partnered** — with clients on requirements analysis, technical solutioning and design reviews; converted requirements into actionable engineering backlogs.

Senior Software Engineer — Autonomous Systems • eMooVit Technology Sdn. Bhd., Cyberjaya, Malaysia *2021 – 2023*

Senior individual contributor for advanced perception, mapping and HMI software.

- **Developed** — the Autonomous Robot GUI — automating point-to-point operation setup to a few clicks, drastically reducing field commissioning time.
- **Built** — a web-based RVIZ visualisation tool, publishing LiDAR and odometry data to a database server for centralised fleet monitoring.
- **Engineered** — multi-floor navigation, eliminating Z-axis drift and enabling indoor autonomy across buildings.
- **Implemented** — auto-charging / auto-docking, allowing robots to dock for charging on low-battery triggers or scheduled cycles.
- **Created** — the RNDF (Road Network Definition File) Tool with a GUI to streamline mission-map authoring.
- **Championed** — rigorous code review, ROS package architecture, Docker-based deployment and CI/CD practices across the software team.

Autonomous Vehicle Engineer • eMooVit Technology Sdn. Bhd., Cyberjaya, Malaysia *Sept 2018 – 2021*

Foundational AV engineering across mapping, localisation, path planning and sensor fusion.

- **Mapped** — the full MAGIC Campus area in Cyberjaya (≈ 20 km) using Normal Distribution Transform (NDT) and LiDAR Odometry and Mapping (LOAM) techniques.
- **Designed** — a three-LiDAR + IMU calibration pipeline, fusing data and transforming all measurements to the rear-axle reference frame.
- **Achieved** — high-speed localisation accuracy up to 60 km/h with covariance accuracy reaching 90%.
- **Constructed** — the mission planner around MAGIC Campus — stop points, junctions, multi-path conversions, traffic lights and zebra crossings.

- **Specialised** — on 2D, 3D and Vision SLAM technologies and contributed to sensor fusion and autonomous system integration.
- **Worked** — closely in Robot Operating System (ROS) and Data Distribution Service (DDS) environments; managed products, tasks and issues via JIRA.
- **Collaborated** — with cross-functional development teams to analyse and shape system solutions against client requirements.

Design Engineer • SONY EMCS (M) Sdn. Bhd., Bangi, Malaysia *Aug 2017 – Aug 2018*

- automation testing using Python scripting and Linux shell environments.
- JIRA-based defect management workflows.
- code-failure discussions in Code Control Board (CCB) meetings.
- physical and virtual analysis on Hybrid Broadcast-Broadband TV (HbbTV) applications.
- HbbTV development for NZ, Australia, Singapore, Japan, Finland, Germany and Malaysia.

Visiting Research Assistant • National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan *Jun 2016 – Sept 2016*

- an impedance meter using Programmable System on Chip (PSoC) 5LP.
- the hardware device with PSoC Creator software.
- the principal researcher with electrical troubleshooting on his research project.

Part-Time Trainer • Astana Digital Sdn. Bhd., Bandar Baru Bangi, Malaysia *2021 - 2023*

- training programmes on the Robot Operating System (ROS) environment.
- practical solutions and coaching for RoboCup and Auto Race competitions.
- Gazebo simulation training and a structured ROS curriculum using TurtleBot3 as the training kit.

KEY PROJECTS

- **LiDAR & IMU Calibration** — Fused three LiDARs and IMU data into a unified rear-axle reference frame.
- **Large-Area HD Mapping** — Mapped the ≈ 20 km MAGIC Campus area in Cyberjaya using NDT and LOAM techniques.
- **Mission Planner — MAGIC Campus** — Built a mission map covering stop points, junctions, multi-path conversions, traffic lights and zebra crossings.
- **High-Speed Localisation** — Achieved up to 60 km/h with 90% covariance accuracy.
- **RNDF Tool** — GUI-based authoring tool that streamlines Road Network Definition File generation.
- **Autonomous Robot GUI** — Few-click point-A-to-point-B autonomous operation setup for clients.
- **Multi-Platform Sensor Fusion** — Delivered full-stack autonomy for 7-seater & 4-seater vehicles, PODs, buggies, jeeps, tractors, track robots and AMRs.
- **Low-Power LITE Solution** — Full-stack autonomy optimised for low-spec compute platforms.
- **Auto-Charging / Auto-Docking** — Low-battery and schedule-triggered docking for autonomous robots.
- **Multi-Floor Navigation** — Z-axis-aware autonomy enabling cross-floor indoor operation.
- **Web-Based RVIZ** — Streamed LiDAR and odometry data to a centralised database server for fleet monitoring.

EDUCATION

Doctor of Philosophy (PhD) — In Progress • Malaysia–Japan International Institute of Technology (MJIIT), Universiti Teknologi Malaysia *Oct 2024 – Present*

Master of Philosophy (M.Phil.) — CGPA 4.00 • Malaysia–Japan International Institute of Technology (MJIIT), Universiti Teknologi Malaysia *2020 – 2024*

B. Eng. in Electronic System Engineering — CGPA 3.77 • Malaysia–Japan International Institute of Technology (MJIIT), Universiti Teknologi Malaysia *2014 – 2017*

Diploma in Electrical and Electronic Engineering — CGPA 3.80 • UTM SPACE, Universiti Teknologi Malaysia *2011 – 2014*

CERTIFICATIONS

- **Professional Technologist (Ts.)** — Malaysia Board of Technologists (MBOT) — certified professional title for technologists in Malaysia.

ACHIEVEMENTS & RECOGNITION

- **2020 • International** — Winner — JACTIM Competition (sponsorship of RM 25,000).
- **2020 • National** — Project Leader for the successful 5G Demonstration Project in Langkawi.
- **2019 • National** — Contributor to the successful 5G Demonstration Project in Putrajaya.
- **2017 • International** — Participant — International Conference of Sustainable Mobility (ICSM).
- **2017 • International** — Director of the Global Outreach Program (GOP) in Japan.
- **2015 – 2017** — JPA Scholarship Holder.
- **2016** — 2nd Runner-Up — JACTIM Research Proposal Competition.
- **2016** — Participant — Japanese Language Short Drama Competition.
- **2011 – 2017** — Dean's List throughout tertiary studies.

PUBLICATIONS

As Lead Author

- W. M. H. Wan Azree, M. A. Abdul Rahman, H. Zamzuri (2018). Vehicle Localization Using Wheel Speed Sensor (WSS) and Inertial Measurement Unit (IMU). Society of Automotive Engineers Malaysia.

As Co-Author

- Dwijotomo, A.; Abdul Rahman, M. A.; Mohammed Ariff, M. H.; Zamzuri, H.; Wan Azree, W. M. H. (2020). Cartographer SLAM Method for Optimization with an Adaptive Multi-Distance Scan Scheduler. Applied Sciences, 10, 347.

LANGUAGES

Malay (5/5) • **English** (5/5) • **Japanese** (2/5)

REFEREES

Sasamoto Akira
Industrial Training Advisor, AIST Tsukuba, Japan
Email: sasamoto.a@aist.go.jp

Mohd Kamarul Hafiz Mohd Tang
Head of HbbTV Department, SONY EMCS (M) Sdn. Bhd., Malaysia
Mobile: +6013-3656353

Muhammad Afiq Che Man
Senior Analyst, British American Tobacco, Malaysia

Fakrul Razi Ahmad Zakuan

Mobile: +6013-2782911 Email: mafqcm@gmail.com

Senior Software Engineer, Technology Innovation Institute (TII), UAE

Mobile: +6019-4001275 Email: fakhrulzakuan@gmail.com