



Muhammad Azzat Zakaria

Assoc. Prof. Ts. Dr. · CEng(UK) · P.Tech

Director, Centre for Innovation & Technology Transfer · UMPSA

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EDUCATION

PhD — Mechatronic Engineering

Universiti Teknologi Malaysia (KL)

2012–2015

BEng Elec.-Mechatronic (1st Class Hons)

Universiti Teknologi Malaysia (Skudai)

2006–2010

CGPA: 3.89 / 4.00

MARA-UTM Express Foundation

Universiti Teknologi Malaysia

2006

CGPA: 3.76 / 4.00

RESEARCH INTERESTS

Autonomous Vehicles SLAM

Mobile Robotics

Intelligent Vehicles Sensor Fusion ROS

Vehicle Stability Mechatronics

AI Navigation

Computer Vision Path Planning UGV

TECHNICAL SKILLS

Programming

ROS, C++, Python, MATLAB, C, Visual Basic

Robotics & AV

SLAM, Sensor Fusion, LiDAR, GPS/IMU, Autonomous Navigation, Path Planning

Systems

Linux, ROS2, Gazebo, CARLA, SolidWorks

Research

Mathematical Modelling, Nonlinear Control,

Postgraduate Supervision, Grant Writing

PROFESSIONAL BODIES

✓ **CEng** — Registered Chartered Engineer (CEng) — Institution of Mechanical Engineers, UK IMechE

SUMMARY

Assoc. Prof. Ts. Dr. Muhammad Azzat Zakaria is a distinguished researcher in Electrical-Mechatronic Engineering and Malaysia's foremost expert in Autonomous Vehicle and Ground Robotics systems. A founding member of the Smart Campus Autonomous Vehicle (SCAV) project, he developed the first locally-built autonomous campus shuttle in Malaysia. Following a career at Intel Corporation, he earned his PhD from UTM in 2015. He currently serves as Director of the Centre for Innovation & Technology Transfer (CITT) at UMPSA, leading national and international research collaborations worth over RM 2 Million in grants. His expertise spans ROS, SLAM, sensor fusion, and AI-driven navigation.

KEY ACHIEVEMENTS

- **RM1.4 Million** LRGS Grant Leader (2025) — Aeroground AI Navigation project, MOHE
- Malaysia's first locally-developed autonomous campus shuttle — SCAV, viral 1.2M Twitter views
- Spearheaded UMPSA Autonomous Ecosystem launch at **Dubai Airshow 2025**
- TUAH UGV co-developer; showcased at **DSA 2026** — covered by Belgium, India, USA & UK international media
- RoBoBus partnership with PIX Moving Japan — RM 150K international grant
- 65+ research grants (leader and member); total portfolio RM 2M+

WORK EXPERIENCE

Director, Centre for Innovation & Technology Transfer

2025–Present

Research & Innovation Department, UMPSA

Managing technology transfer strategic planning and innovation ecosystem at UMPSA.

Associate Professor — Autonomous Systems & Robotics

2019–Present

Faculty of Manufacturing & Mechatronic Engineering Technology (FTKPM), UMPSA

Lead researcher and lecturer in autonomous robotics, mechatronics, and vehicle dynamics.

Lead, Robotic Research Network (RRN)

2024–2026

Research & Innovation Department, UMPSA

Spearheaded UMPSA's robotics research agenda and industry collaborations.

Head of Programme — Mechatronic Engineering

2021–2023

FTKPM, UMPSA

Registration No: 695251 (2025)
✔ **Engr** Registered Engineer —
Board of Engineers Malaysia (BEM)
Registration No: 79744A

✔ **P.Tech** — Registered
Professional Technologist (P.Tech)
— Malaysia Board of Technologist
(MBOT) (2021)

PUBLICATION METRICS

H-index **16** (Google Scholar)
H-index **13** (Scopus)
H-index **8** (WoS)
Publications **100+**

🔗 [Google Scholar Profile](#)

🔗 [Scopus Profile](#)

IP & PATENTS

Patents Filed:

- Hybrid Fleet Mission Orchestration for Autonomous Robots (PI2026002275, 2026)

- DREBAR Education Mobile Robotics

Trademarks:

- DREBAR Robotics TM2025041899 (Class 07)
- DREBAR Robotics TM2025041906 (Class 12)
- DREBAR Robotics TM2025041905 (Class 09)

Copyright:

- DREBAR Embedded System Module (LY2022C03925, 2022)

ONLINE PROFILES

🌐 www.maizzat.my

🌐 www.research.maizzat.my

📖 cv.maizzat.my

🔗 [Expert Directory \(UMPSA\)](#)

Managed EAC accreditation, academic taskforces, and quality improvement.

Head of Programme — UMP-HsKA Germany Dual Degree **2019–2021**
FTKPM, UMPSA

Managed the premier UMPSA-Karlsruhe University of Applied Sciences dual-degree collaboration.

Visiting Lecturer — Autonomous Robotic Systems **2022**
University of Applied Sciences Würzburg-Schweinfurt, Germany

Visiting Lecturer — Autonomous Vehicle Development **2021**
Universitas Brawijaya, Indonesia

Taught 200 students on autonomous vehicle development for agricultural applications.

Process R&D Engineer / NPI Technical Project Manager **2010–2012**
Intel Microelectronics Malaysia

Burn-in board development, C-spec development, NPI project management, ATCED.

KEY RESEARCH PROJECTS

Aeroground: Autonomous Aero-Ground Robot **RM 593,200**
LRGS · Ministry of Higher Education · 2025–2028 · Leader

Lead researcher on AI-driven navigation and secure edge computing for multi-modal autonomous robots. Multi-institutional collaboration with UPNM and UKM.

Autonomous Last-Mile Delivery Robot (DREBAR) **RM 220,920**
PRGS · 2025–2027 · Leader

Strengthening local MSME logistics through autonomous delivery robotics.

PIX Moving RoBoBus Deployment in Malaysia **RM 150,000**
Antarabangsa (PIX Moving Japan) · 2025–2026 · Leader

Partnership with world-leading EV AV manufacturer PIX Moving Inc. (Japan) for autonomous bus deployment in Malaysia.

TUAH Unmanned Ground Vehicle (UGV) **DSA 2026**
UMPSA-DEFTECH Collaboration · Defence

Co-developer of modular autonomous ground vehicle showcased at DSA 2026 with international media coverage.

Smart Campus Autonomous Vehicle (SCAV) **RM 156,000**
Flagship Grant RDU192201 · 2019–2020

Founding member, Malaysia's first locally-developed autonomous campus shuttle. Led SLAM, ROS architecture and perception systems. Viral 1.2M Twitter views.

Autonomous Delivery Robot (DREBAR) **RM 108,400**
Special Project Grant SPU210102 · 2023–2024 · Leader

DREBAR robotic platform serving research and TVET education nationally. Gold Medal PECIPTA 2022.

RESEARCH GRANTS — AS LEADER (SELECTED)

- **LRGS (2025):** Robust Architectures for Autonomous Ground Vehicles **RM 593,200**
- **PRGS (2025):** Autonomous Last-Mile Delivery Robots for MSMEs **RM 220,920**
- **Antarabangsa (2025):** PIX Moving RoBoBus AV Deployment (RDU252718) **RM 100,000**
- **Padanan Int'l (2025):** PIX Moving RoBoBus AV Deployment (UIC251532) **RM 50,000**

- **Pembangunan (2024):** FTKPM UMPSA Digital Twin Simulator **RM 37,300**
- **Inovasi Sosial (2024):** Learning Methodology for Autonomous Robots **RM 15,000**
- **Spl. Project (2023):** Development of Autonomous Delivery Robot **RM 108,400**
- **FRGS (2021):** Bezier Curve Fitting for Autonomous Navigation **RM 61,000**
- **Pembangunan (2021):** DREBAR Automation Embedded System Module **RM 30,000**
- **PGRS (2020):** Torque Analysis of End Effector Ankle Foot Orthosis **RM 2,500**
- **PGRS (2020):** Steering Angle Estimation for Non-Holonomic System **RM 2,850**
- **FRGS (2019):** Trajectory Tracking Error of Non-Holonomic Dynamics **RM 84,800**
- **Geran Dalam (2019):** Mathematical Modelling of Two-In-Wheel AV **RM 26,000**
- **PGRS (2019):** Predictive Stability Model of AV Based on Road Profile **RM 3,500**
- **Geran Dalam (2018):** Task Allocation Framework for Multi-Robot System **RM 31,500**
- **Geran Dalam (2018):** Autonomous Vehicle Stability Analysis **RM 29,000**
- **Industri (2018):** Pen Batches Localization Using RFID Tag **RM 20,000**
- **Geran Dalam (2017):** Active Stability Control Model of Lateral Dynamics **RM 22,000**
- **Geran Dalam (2016):** Intelligent Drive System for Trajectory Tracking **RM 23,300**

RESEARCH AWARDS

- Gold** — ITEX 2026 (*CAMKENDERAAN Forensics Device, Member · International*)
- Bronze** — ITEX 2024 (*DREBAR: Driven By Advanced Robotic, Leader · National*)
- Gold** — PECIPTA 2022 (*DREBARedu Mobile Robotics TVET Module, Leader · National*)
- Silver** — PECIPTA 2022 (*Intelligent Agility Training Device, Member · National*)
- Silver** — MTE 2019 (*Autonomous Road Marks Painting System, Member · International*)
- Gold & Special Award** — CITREX 2018 (*Autonomous Road Marks Painting System, Member · University*)
- Silver** — CITREX 2017 (*AGV Localization Landmark Prediction Model, Leader · University*)
- Silver** — CITREX 2018 (*LASER SIMULATOR: Visibility Search Graph, Member · University*)
- Bronze** — CITREX 2018 (*Automated Fruit Grading System, Member · University*)

CONSULTATION PROJECTS

- **Perception, Localisation, Planning And Control – Advanced Level** · RGM Network (2023)
- **Autonomous Mapping Process And Close Loop System** · RGM Network (2023)
- **Autonomous Vehicle System Programming (Basic Level)** · RGM Network (2023)
- **Autonomous System Development: Fundamental To Application Basics** · RGM Network (2022)
- **Autonomous Driving Vehicles Enabled By Technology Advances** · RGM Network (2021)
- **Autonomous Vehicle Sensing System** · RGM Network (2021)
- **Smart Autonomous In Vehicle Technology** · RGM Network (2020)

EXPERT ADVISORY ROLES

- Subject Matter Expert — 3rd Party Autonomous Driving System Assessment, Cyber-security Malaysia

- Modern Vehicle Expert Panel, Cybersecurity Malaysia (National)
- Technical Expert Advisor — MRANTI Autonomous AV Living Lab Standard (National)
- Panel Pakar MRANTI Autonomous Vehicle Industry Roundtable (National)
- Expert Advisor — Autonomous Ground Mobile Robot, MIMOS (National)
- Panel Pakar Vehicle Forensics — Kenderaan Kotak Hitam (National)
- Panel Pakar Modern Cars and Public Safety — MIROS & CSM (National)
- Expert Advisor, Move Robotic Sdn Bhd (National)
- Expert Advisor — RGM Network for Industry4wrld Autonomous Consultation
- UMPSA Robotic Leader Taskforce Special Project Grant

REFERENCES

Prof. Ir. Ts. Dr. Faiz bin Mohd Turan

Professor, UMPSA · faizmt@ump.edu.my

Assoc. Prof. Dr. Abdul Adam bin Abdullah

Associate Professor, UMPSA · adam@ump.edu.my