Htet Myat Aung (Alexander E. Hong)

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RESEARCH PROFILE

Incoming **Master of Mechanical Engineering (Automation & Control)** at **National Chung Cheng University** on a **fully funded scholarship**, and a Machine Learning Researcher with hands-on experience across computer vision, 3D deep learning, SLAM, and data-pipeline engineering. **First author** of the **Best Paper Award**–winning study at IEEE ICoICT 2025, which introduced an optimised 3D-CNN reaching **99.75% accuracy** in real-time infrared gas-leak classification, and **co-author** of a **Q1 (Web of Science)** journal paper on motion-induced eddy current testing for high-speed railway inspection. Proficient in Python and C/C++ for perception applications, with practical experience in camera calibration, sensor integration, ROS2-based autonomous navigation, and model optimisation for resource-constrained environments. Focused on perception, robotic autonomy, and ML-driven automation.

EDUCATION

National Chung Cheng University — Sep. 2026 – 2028 (Expected)
Incoming Master of Mechanical Engineering (Automation & Control) — Chiayi, Taiwan

- **Fully Funded Scholarship**
- **Department:** Mechanical Engineering

King Mongkut's University of Technology Thonburi (KMUTT) — Graduated Sep. 2025
Bachelor of Engineering in Automation Engineering — Bangkok, Thailand

- **GPAX: 3.66/4.00 (First Class Honors)**
- **Thesis:** Natural Gas Methane Leak Detection Using an Infrared Camera
- **Department:** Control System and Instrumentation (INC)

PUBLICATIONS

Journal Articles

- "Development of High-Speed Inspection Technique Based on Motion-Induced Eddy Current Testing for Surface Railway Defects," *Nondestructive Testing and Evaluation* (Taylor & Francis), 2026. **Q1 – Web of Science (JCR)**. *Co-author* — MIECT probe development and signal processing. DOI: 10.1080/10589759.2026.2638558

Conference Papers

- **H. M. Aung** and S. Wongsa, "Optimised 3D-CNN for Real-Time Infrared Natural Gas Leak Classification: Balancing Accuracy and Computational Cost," in *Proc. 13th IEEE Int. Conf. on Information and Communication Technology (ICoICT)*, Bandung, Indonesia, 2025, pp. 1–6. **Best Paper Award**. *First author*. DOI: 10.1109/ICoICT66265.2025.11192973

RESEARCH & PROFESSIONAL EXPERIENCE

Machine Learning Researcher (Full-Time) — Sep. 2025 – May 2026
Maintenance Technology Center (MTC) – Non-Destructive Detection Technology Lab, KMUTT — Bangkok, TH

- **Journal Publication (co-author):** Contributed MIECT probe development and signal processing for high-speed railway defect inspection — detecting cracks as small as 0.5 mm at speeds up to 30 km/h on ferromagnetic rail steel (published in *Nondestructive Testing and Evaluation*; see **Publications**).
- **Production Pipeline Engineering:** Architected and maintained scalable ETL pipelines in Python to process high-volume acoustic emission sensor data.
- **Workflow Automation:** Optimized end-to-end ML workflows, reducing data-processing latency and accelerating model-training lifecycles through automated scripting and rigorous version control.
- **Model Reliability & Scalability:** Engineered robust anomaly-detection systems for industrial pipe inspection, focusing on reproducibility and scalable deployment in Linux-based environments.
- **Data Quality Assurance:** Implemented automated validation within the data-ingestion pipeline to ensure high-fidelity input for unsupervised clustering models.

Computer Vision (Student) Researcher Jun. 2024 – Sep. 2025
Department of Control Systems and Instrumentation (INC), KMUTT Bangkok, TH

- Developed an optimized 3D-CNN for real-time infrared video classification achieving **99.75% accuracy** in methane gas-leak detection from temporal-spatial thermal-camera features.
- Built a classical image-processing pipeline (Gaussian Mixture Models, Running Average, adaptive background subtraction) for robust foreground segmentation under varying lighting conditions.
- Optimized the model for edge deployment via input-resolution scaling and quantization, maintaining 99%+ accuracy while **reducing inference time by 60%**.
- **First-authored** the resulting study, awarded **Best Paper** at IEEE ICoICT 2025 (see **Publications**).

Machine Learning Intern Jun. 2025 – Aug. 2025
Maintenance Technology Center (MTC) – Non-Destructive Detection Technology Lab, KMUTT Bangkok, TH

- Independently designed and implemented unsupervised ML solutions for GRP pipe inspection using acoustic emission sensor data on a Linux-based WSL2 platform with Git version control.
- Won **First Runner-Up Award** in the "Smart Infrastructure for Smart City" competition by the Metropolitan Waterworks Authority.
- Listed in the **KMUTT Hall of Fame** for outstanding achievement in Smart Infrastructure development.

Junior ML / Large Language Model Intern Dec. 2024 – Feb. 2025
HoneyHunt.AI Bangkok, TH

- Designed and deployed agentic workflows using Generative AI to automate data processing and decision-making for AI-powered recruitment, directly supporting operational efficiency.
- Improved algorithm scalability and matching accuracy for production-level deployment.
- Implemented API management best practices including versioning, rate limiting, and authentication using API gateways for reliable GenAI workflow deployment.

Perception (Student) Research Engineer Feb. 2024 – Jul. 2024
CODIA Lab, KMUTT & Panasonic Singapore Bangkok, TH

- Developed and optimized SLAM Sparse Bundle Adjustment algorithms in C for visual odometry applications targeting real-time edge deployment on ARM-based embedded platforms.

FormulaStudent Vehicle Control Student Researcher Nov. 2023 – Feb. 2024
COSIN Lab, INC Department, KMUTT Bangkok, TH

- Implemented the micro-ROS framework on microcontrollers for real-time IMU data acquisition and sensor synchronization, achieving sub-10ms latency for control loop feedback.

LEADERSHIP & ACTIVITIES

Founder – Laboratory of Robotics and AI (L.O.R.A) Dec. 2019 – Jun. 2021
Robotics Research Laboratory Yangon, Myanmar

- Founded and led a comprehensive robotics research laboratory focusing on practical applications.
- Spearheaded development of autonomous disinfection robots during the COVID-19 pandemic in Myanmar.
- Managed cross-functional communication between engineering teams, public health stakeholders, and external partners to align technical development with societal needs.

Mentor – FIRST GLOBAL Challenge 2019 Jun. 2019 – Oct. 2019
Myanmar National Robotics Team Dubai, UAE

- Provided technical guidance and strategic mentorship to Myanmar's national robotics team through structured training sessions and collaborative problem-solving.
- Led the team to win the **Judges Award** at an international robotics competition.

AWARDS & RECOGNITION

Best Paper Award – 13th IEEE International Conference on ICT (ICoICT 2025)
First Runner-Up – Smart Infrastructure for Smart City, Metropolitan Waterworks Authority
KMUTT Hall of Fame – Outstanding Achievement in Smart Infrastructure Development
Judges Award – FIRST GLOBAL Challenge 2019 (Team Mentor, Myanmar National Team)

TECHNICAL SKILLS

Perception & Vision: OpenCV, SLAM (Sparse Bundle Adjustment), Computer Vision, Image Processing, Background Subtraction, Feature Extraction, Camera Calibration

Robotics: ROS2, Robot Kinematics & Control, Sensor Fusion, micro-ROS, Autonomous Navigation, Gazebo Simulation

Programming: Python, C++, C & Embedded C, Bash Scripting

ML / DL: PyTorch, TensorFlow, 3D CNN, Object Detection (YOLO), Segmentation, Model Quantization

Tools: Git, Linux, WSL2

LANGUAGES

English: Fluent (TOEFL 84 – Writing: 25, Speaking: 26); extensive technical documentation and international collaboration experience
Burmese: Native