

NAY LINN AUNG

Senior Manufacturing Technology Engineer | Machine Vision & Industrial AI Specialist

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PROFESSIONAL SUMMARY

Senior Manufacturing Technology Engineer with 12+ years of experience in Industrial Automation, Machine Vision, and AI-Driven Quality Inspection. Proven expertise in deploying computer vision models for defect detection, segmentation, and classification on high-speed manufacturing lines. Skilled in integrating vision systems with PLCs, encoders, and industrial networks using OPC-UA, MQTT, and REST protocols. Experienced in edge AI optimization (NVIDIA Jetson, TensorRT, ONNX Runtime), containerized ML deployment (Docker, Kubernetes), and full model lifecycle management from data collection to production monitoring. Proficient in Python, C++, PyTorch, and TensorFlow with a track record of delivering production-ready solutions for major manufacturing clients.

TECHNICAL SKILLS

Computer Vision & ML: Object Detection, Defect Classification, Image Segmentation, PyTorch, TensorFlow, OpenCV, Synthetic Data Generation, Active Learning, Domain Randomization

Edge AI & MLOps: NVIDIA Jetson, Intel OpenVINO, ONNX Runtime, TensorRT, Docker, Kubernetes, Model Versioning, Drift Detection, CI/CD for ML Pipelines

Robotics & Manufacturing: Multi-Robot Coordination, Servo Control, Motion Planning, Universal Robots, Vision-Guided Robotics, Trigger-Based Image Capture, Collaborative Robot Safety

Programming: C/C++, Python, MATLAB/Simulink, SQL, LabVIEW, C# | Real-time Systems, Embedded Software, Git, Jira

Quality & Data Strategy: Data Annotation Workflows, Quality Gate Validation, Measurement System Analysis (MSA), False Positive/Flow-Out Optimization, Model Calibration, Root Cause Analysis

Industrial Systems: PLC (Siemens, Allen-Bradley, Mitsubishi, Omron), SCADA (Ignition, Willowglen), OPC-UA, MQTT, REST, Industrial Vision (Keyence, Omron), Industrial Cameras, Lighting & Optics, Encoders, Trigger-Based Capture

PROFESSIONAL EXPERIENCE

Graduate Research Assistant

Hood College | Jan 2025 – Present | Frederick, MD, USA

- Pursuing M.S. in Computer Science with a focus on Data Science and AI, applying deep learning and computer vision techniques to industrial inspection and manufacturing quality problems
- Coursework in Algorithm Analysis, Data Mining, Data Science, and Artificial Intelligence with hands-on projects in image classification, GPU-accelerated model training, and statistical modeling for quality metrics

Senior Software and Control Engineer

Kowa Skymech Pte. Ltd. | Jan 2022 – Dec 2024 | Singapore

- Designed and deployed machine vision inspection systems integrated with PLC logic for automated defect detection, segmentation, and classification on high-speed manufacturing lines
- Optimized inference pipelines for edge deployment using ONNX Runtime and TensorRT on embedded hardware, achieving real-time latency requirements for moving-line visual inspection
- Packaged and deployed ML models using Docker containers, implementing version control, rollback strategies, and observability for latency, drift, and false-positive/false-negative metrics
- Led data collection campaigns, managed annotation workflows, and established quality gates for model validation
- Utilized synthetic data pipelines and augmentation techniques to improve model robustness and reduce training time
- Integrated vision inspection systems with PLCs, encoders, triggers, and industrial networks using OPC-UA, MQTT, and REST protocols for plant-level connectivity and reliability
- Coca-Cola (Pacific Refreshments) Project: Architected and deployed a full-stack Ignition SCADA solution integrated with Kepware OPC-UA and Siemens PLCs for real-time production monitoring and quality inspection across automated packaging lines
- Designed the communication layer for Universal Robots (UR Cobots) to interface with the Ignition gateway, enabling real-time production tracking, safety scanner integration, and vision-guided pick-and-place control

Control Systems Engineer

Willowglen Services Pte. Ltd. | Oct 2017 – Jan 2022 | Singapore

- Architected and deployed enterprise SCADA control systems, optimizing system stability and real-time response for Singapore's critical energy infrastructure (EMA, SP Group, Tuas Power, SLNG)
- Implemented state estimation and monitoring algorithms processing sensor data from distributed RTUs across power grid networks
- Designed PLC control programs (Siemens, Allen-Bradley) with safety-critical logic for industrial process control
- Developed data acquisition pipelines using Kepware OPC-UA and MS SQL for real-time system performance analysis, drift detection, and proactive monitoring
- Analyzed system performance data to identify failure modes and implement predictive maintenance algorithms

Software Engineer – Factory Automation

Hirata FA Engineering (S) Pte. Ltd. | Aug 2014 – Sep 2017 | Singapore

- Developed robot control software integrating PLCs, servo drives, and machine vision systems for automated inspection and assembly lines in precision manufacturing
- Implemented motion control algorithms for multi-robot coordination in high-speed pick-and-place applications
- Integrated Keyence and Omron industrial cameras with optimized lighting and optics configurations for real-time defect detection and classification, achieving 99.5% inspection accuracy while balancing false positives vs. flow-out risk
- Conducted system validation testing, measurement system analysis (MSA), and documented inspection algorithms and calibration procedures for client handover and production sustainment

Automation Engineer

General Service Engineering Co., Ltd. | May 2010 – Jun 2012 | Myanmar

- Developed PLC programs and control logic for industrial automation machinery
- Performed sensor integration, system troubleshooting, and commissioning for manufacturing clients

EDUCATION

Master of Science in Computer Science (Data Science & AI) – *In Progress*

Hood College, USA | Jan 2025 – Dec 2026 (Expected)

Master of Science in Computer Control & Automation

Nanyang Technological University, Singapore | Aug 2013 – Aug 2014

Bachelor of Engineering in Mechatronics

Yangon Technological University, Myanmar | Dec 2005 – Dec 2010

CERTIFICATIONS & SPECIALIZED TRAINING

- Collaborative Robot Safety Design and Deployment – University at Buffalo (2022)
- Reinforcement Learning with MATLAB & Simulink – MathWorks (2021)
- Developing Industrial IoT – University of Colorado Boulder (2021)
- Deep Learning with MATLAB – MathWorks (2020)
- Machine Learning with MATLAB – MathWorks (2020)
- Advanced PLC and SCADA Control – Willowglen System Inc. (2018)
- LabVIEW Core 1 & Core 2 – National Instruments (2017)

PROFESSIONAL AFFILIATIONS

Institution of Engineers Singapore (IES) | NTU Alumni Club | Myanmar Engineering Society | MATLAB Central