

# MAR LAR AUNG

Industrial Automation Engineer | System Programmer |  
Full Stack Developer | SCADA | MCS | MES Integration

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## PROFESSIONAL SUMMARY

### Architecture & Systems Thinking

- **System Architect, Control Systems Programmer, and Full-Stack Software Developer** with 15+ years of experience in delivering industrial automation solutions across factory automation, advanced electronic manufacturing, and semiconductor environments in Singapore, Japan, APAC, and Southeast Asia.
- Designs **production-ready automation architectures** using system thinking, critical reasoning, and analytical judgment.
- Evaluates technical **trade-offs** to balance performance, cost effectiveness, robustness, scalability, and long-term maintainability.
- Selects and tailors **tools, technologies, and architectures** to fit specific manufacturing and operational needs.
- Operates effectively in **complex, multi-site and cross-partner environments**, sustaining collaboration and delivery focus under demanding conditions.

### Automation & Manufacturing Systems

- Drives **yield and quality improvement, cycle-time reduction, and equipment uptime, stability, and reliability** through practical automation solutions.
- Strong experience in **equipment automation, SECS/GEM integration, and MES connectivity** for semiconductor manufacturing.
- Hands-on with **real-time data tracking and process control** for Just-In-Time (JIT) manufacturing systems.
- Proficient in **PLC & HMI programming** across Omron, Mitsubishi, Keyence, Allen-Bradley, and Siemens platforms.
- Experienced with industrial communication protocols including **SECS/GEM, TCP/IP, Modbus/TCP, EtherNet/IP, EtherCAT, and OPC UA, Serial Com- RS232, RS485**.

### Software & DevOps

- Proficient in **C#, .NET, C++, Python, and SQL** across control, backend, and application layers.
- Practicing **SOLID principles** and **clean architecture** to support maintainability, scalability, and stable deployment in production environments.
- Frontend and application development experience with **HTML, CSS, JavaScript, React, Angular, Blazor, and Django**.
- Uses **GitHub Actions**, version control, and **CI/CD pipelines** for reliable and maintainable software delivery.
- Comfortable operating across **Windows and Linux** environments in production systems.

### Reliability, Quality & Continuous Improvement

- Applies **FMEA, 8D, and MTBF analysis** to improve system reliability and operational stability.
- Delivers **customized, stable, and continuously improving automation solutions** for complex factory environments.
- Actively developing capabilities in **ROS2 (Python/C++)**, **OpenCV**, and **machine learning libraries** such as **scikit-learn** and **TensorFlow** for future robotics and intelligent automation.
- Consistently delivers **maintainable, production-ready systems** from architecture and design through global deployment and final handover.
- Supported **production ramp-up, commissioning, and system validation** through the execution of **Factory Acceptance Tests (FAT), Site Acceptance Tests (SAT), and Integrated System Tests (IST)**.

# SKILLS

## | PROFESSIONAL

- System & Conceptual Thinking
- Critical and Analytical Thinking
- Structured Problem Solving
- Decision Making Under Constraints
- Process Improvement & Optimization
- Attention to Detail
- Stakeholder Communication
- Cross-Functional Collaboration

## | TECHNICAL

- PLC & HMI Programming: Allen-Bradley, Keyence, Omron, Mitsubishi, Siemens, Inovance
- C#, Java, C++, Python, R
- Frontend: HTML, CSS, JavaScript, React, Angular
- Structured Text, Pascal
- Motion Control Systems
- Industrial Robotics: ABB, KUKA, Epson, IAI, Adept
- AGVs: DF, Gyrobot, Adept
- Robotic Simulation: RoboDK
- Databases: SQLite, PostgreSQL, MySQL, MSSQL
- Machine Vision Systems: Keyence, Cognex, Zebra, Hexagon, HIK
- Industrial Communication Protocols: TCP/IP, Serial COM, ModbusTCP, EtherCAT, EthernetIP, OPC UA, MQTT
- EPLAN, SolidWorks, AutoCAD
- Embedded Platforms: Arduino, Raspberry Pi
- Technical Documentation and User Manual Development

# WORK EXPERIENCE

## SENIOR SOFTWARE DEVELOPMENT ENGINEER

ASCENDZE PTE.LTD, SINGAPORE | 2022 OCTOBER - 2025 JULY

- Independently designed, developed, and deployed **web-based and desktop automation applications** using **.NET technologies**, alongside **PLC programming** to deliver complete manufacturing line automation from system architecture through final integration.
- Developed **Windows Forms-based applications** for robotics and automation systems using **C#, C++, and Python**, supporting equipment control and operational workflows.
- Designed and implemented a **Manufacturing Control System (MCS)** using **ASP.NET Core** and **SQL Server**, enabling **real-time production tracking** and reducing operator errors by approximately 30%.
- Integrated **SECS/GEM communication** for both **host and equipment-side applications**, supporting standardized semiconductor equipment connectivity.
- Developed a **desktop application for FOUP stocker control** and integrated it with the MCS via **SECS/GEM**, enabling automated material handling and status synchronization.
- Designed and implemented **automatic parallelization logic** for a **high-mix, low-volume packaging line**, improving operational flexibility and throughput.
- Integrated and commissioned **robotic systems**, including **six-axis articulated robots** (ABB, KUKA) and **Cartesian robots** (IAI), for automated handling and process execution.
- Developed **motion control applications** for **stepper motors and conveyor control systems**, supporting synchronized and reliable material flow.
- Implemented a **PLC-to-cloud communication mechanism** over **TCP/IP**, enabling secure remote data access and system monitoring.
- Provided **technical guidance and mentorship** to associate engineers and interns in **control systems, automation software development, and system integration practices**.

## MANAGER (TECHNOLOGICAL DIVISION)

ANGEL SINGAPORE (ASIA) PTE.LTD, SINGAPORE | 2019 NOVEMBER - 2021 JANUARY

- Analyzed operational and customer data using **SQL** to identify procedural inefficiencies, improving the accuracy and performance of **real-time video surveillance and monitoring systems** used in regulated casino environments.
- Designed and developed **internal desktop tools** using **Java Swing** to support R&D teams, including **database schema design** and preparation for **API-based system integration**.
- Enhanced application security by implementing **password hashing**, **user credential management**, and **role-based access control (RBAC)** for server-side web applications supporting surveillance operations.
- Implemented backend **data pipelines** using **Spring-based JDBC** with **MySQL**, enabling reliable data integration between surveillance systems and internal applications.

# SKILLS - IN PROGRESS

## | Computer Science Foundations

- CS50SQL
- CS50Python
- CS50Web
- CS50AI
- CS50R
- CS50X
- CS50CyberSecurity

## | Data Science & Machine Learning

- NumPy, pandas, scikit-learn
- TensorFlow, PyTorch

## | Machine Vision & Robotics

- OpenCV
- ROS 2 (C++, Python)

## | Artificial Intelligence

- Machine Learning Algorithms
- Agentic AI Workflows
- Large Language Models (LLMs)

## | Backend, Data & Observability

- Apache Hadoop
- Apache Spark
- Apache Airflow
- Apache Kafka
- Prometheus
- Grafana

## | Messaging

- MQTT
- Rabbit MQ

## | Cloud, DevOps and Project Tools

- CI/CD: GitHub Actions, Jenkins
- Infrastructure as Code: Terraform
- Project Management: Jira

- Improved usability of system access interfaces by refining **login page UI** using **HTML, CSS, and JavaScript**.
- Developed **multi-threaded testing utilities** to simulate high-volume API traffic, validate system behavior under load, and support integration with Java Swing-based internal tools.
- Built internal **monitoring and diagnostic tools** for DevOps environments, supporting **load balancing analysis, data accuracy validation, and latency troubleshooting** in real-time systems.

## SYSTEMS AND CONTROL SOFTWARE ENGINEER

*YAC SYSTEMS SINGAPORE PTE.LTD, SINGAPORE | 2018 DECEMBER – 2019 SEPTEMBER*

- Designed and developed **control systems and HMI applications** for **fully automated stockers and wafer handling equipment**, using **C#** and multiple **PLC platforms** to support reliable semiconductor manufacturing operations.
- Developed an **Automated Storage and Retrieval System (ASRS)** integrated with **Automated Guided Vehicles (AGVs)** for hospital material management, enabling efficient, traceable, and safe material flow.
- Participated in the **initial planning and design phase of conveyor system projects** for **silicon wafer fabrication facilities**, collaborating with engineering and operations teams on layout, integration considerations, and implementation readiness.
- Implemented **wireless handshaking and communication protocols** with **AGVs**, enabling coordinated operation between **robots, servo motors, AGVs, and main production lines**, with a focus on **operational efficiency and safety compliance**.

## SYSTEMS AND CONTROL ENGINEER

*CASEM (ASIA) PTE.LTD (SUBSIDIARY OF MANUFACTURING INTEGRATION TECHNOLOGY, MIT, SINGAPORE | 2013 MAY – 2018 NOVEMBER*

- Designed and managed **end-to-end factory automation systems**, including **multi-station, high-speed, high-precision advanced electronic assembly production lines**, ensuring alignment with performance, quality, and delivery requirements.
- Optimized and refactored **PLC control logic**, reducing **machine downtime** by **approximately 20%** and enabling smooth and stable **production ramp-up** in high-throughput environments.
- Designed and developed **high-precision material handling equipment**, supporting accurate positioning and reliable operation for sensitive and tolerance-critical materials.
- Developed **PLC-controlled production equipment** for **medical device catheter coating**, supporting **multiple product variants** through **configurable process parameters and recipe management interfaces**.
- Implemented **real-time defect detection and data collection systems** for **analog devices** such as **load cells and pressure sensors**, enabling improved yield monitoring and process feedback.
- Designed and integrated **machine vision inspection systems** for **label reading, data extraction, defect detection, and pattern recognition**, supporting both quality assurance and traceability.
- Conducted **yield analysis and quality control activities** in alignment with **international manufacturing and medical device standards**, contributing to reduced defect rates and improved process consistency.

## EDUCATION

### | BACHELOR OF ELECTRICAL

#### POWER ENGINEERING

Yangon Technological University (YTU), Myanmar | 2006

### | MASTER OF BUSINESS

#### ADMINISTRATION

University of Nottingham (UK)  
Global Campus Program –  
China, Malaysia, Singapore (PSB  
Academy)  
MBA, 2019

## PROFESSIONAL CERTIFICATES

### | EPLAN ELECTRIC P8

EPLAN Software and Services,  
Malaysia | 2018

### | OMRON SYSMACS STUDIO

LKH Precicon, Singapore | 2017

### | SOLIDWORKS ELECTRICAL

2D

SEACAD, Singapore | 2019

### | CS50B, CS50T

HarvardX via edX | 2021

## PROFESSIONAL AFFILIATIONS

### | MEMBERSHIP

Myanmar Engineering Society | 2006 – Present

## ELECTRICAL DESIGN ENGINEER

PANASONIC INDUSTRIAL DEVICES SINGAPORE PTE LTD, SINGAPORE | 2013 JANUARY – 2013 MAY

- Designed and programmed **automated machines for micro-electronic device manufacturing**, consistently delivering projects within **tight production and delivery timelines**.
- Implemented **production data tracking for 2D micro codes on embossed reel-and-tape packaging machines**, supporting traceability and quality control for micro-device packaging.
- Developed **clear and structured operation manuals** to support production managers, supervisors, and operators in **machine operation, troubleshooting, and routine maintenance**.
- Managed **electrical component selection and hardware procurement**, balancing technical requirements, cost constraints, and delivery schedules to ensure **on-time and within-budget project execution**.

## SYSTEMS PROGRAMMER

FUJICON ENGINEERING PTE LTD, SINGAPORE | 2011 APRIL – 2013 JANUARY

- Designed and delivered **automated machines with feeder and pick-and-place systems** for multiple manufacturing customers, consistently meeting **tight project delivery schedules**.
- Engineered **automated material feeding solutions** using **bowl feeders, linear feeders, and hopper feeders**, ensuring stable, repeatable, and high-throughput part supply.
- Developed **automated pick-and-place and assembly systems** with **part orientation detection and defect identification**, improving assembly accuracy and process reliability.
- Designed and implemented **machine control systems and operator interfaces** using **RSLogix 5000, Keyence, Mitsubishi, and Omron PLC platforms**, along with corresponding **HMI systems**.

## TECHNICAL SPECIALIST

PODOYO PLASTICS INDUSTRY (M) SDN BHD (FOR CELESTICA SINGAPORE), MALAYSIA | 2009 SEPTEMBER – 2011 MARCH

- Monitored and troubleshoot **fully automated production lines for printer cartridge manufacturing**, ensuring **continuous operation, rapid issue resolution, and minimal downtime**.
- Performed **vision system calibration and optimization** for **high-precision vision inspection systems** supporting **THA assembly processes**.
- Troubleshoot and optimized **robotic palletizing and packaging lines**, including **point teaching, mechanical adjustment, and process tuning** for advanced robotic systems such as **six-axis articulated robots, custom multi-axis robots, and integrated forming, shaping, and sealing machines**.

## ASSISTANT ENGINEER

TSM CONSULTANCY PTE LTD, SINGAPORE | 2008 AUG – 2009 MAY

- Conducted **traffic surveys**, performed **data entry and analytical assessments**, and supported the development of **road design proposals** for **LTA infrastructure projects**, including **technical report preparation, road and traffic plan drafting, and associated engineering documentation**.