

2025 Integrated Work Study Programme (IWSP) at OMRON as a Robotics Application Engineer

ABOUT OMRON

OMRON Electronics Pte Ltd Singapore (OEPSG) is an **Industrial Automation** partner that creates, sells and services fully integrated automation solutions that include sensing, control, safety, vision, motion, **robotics** and more.



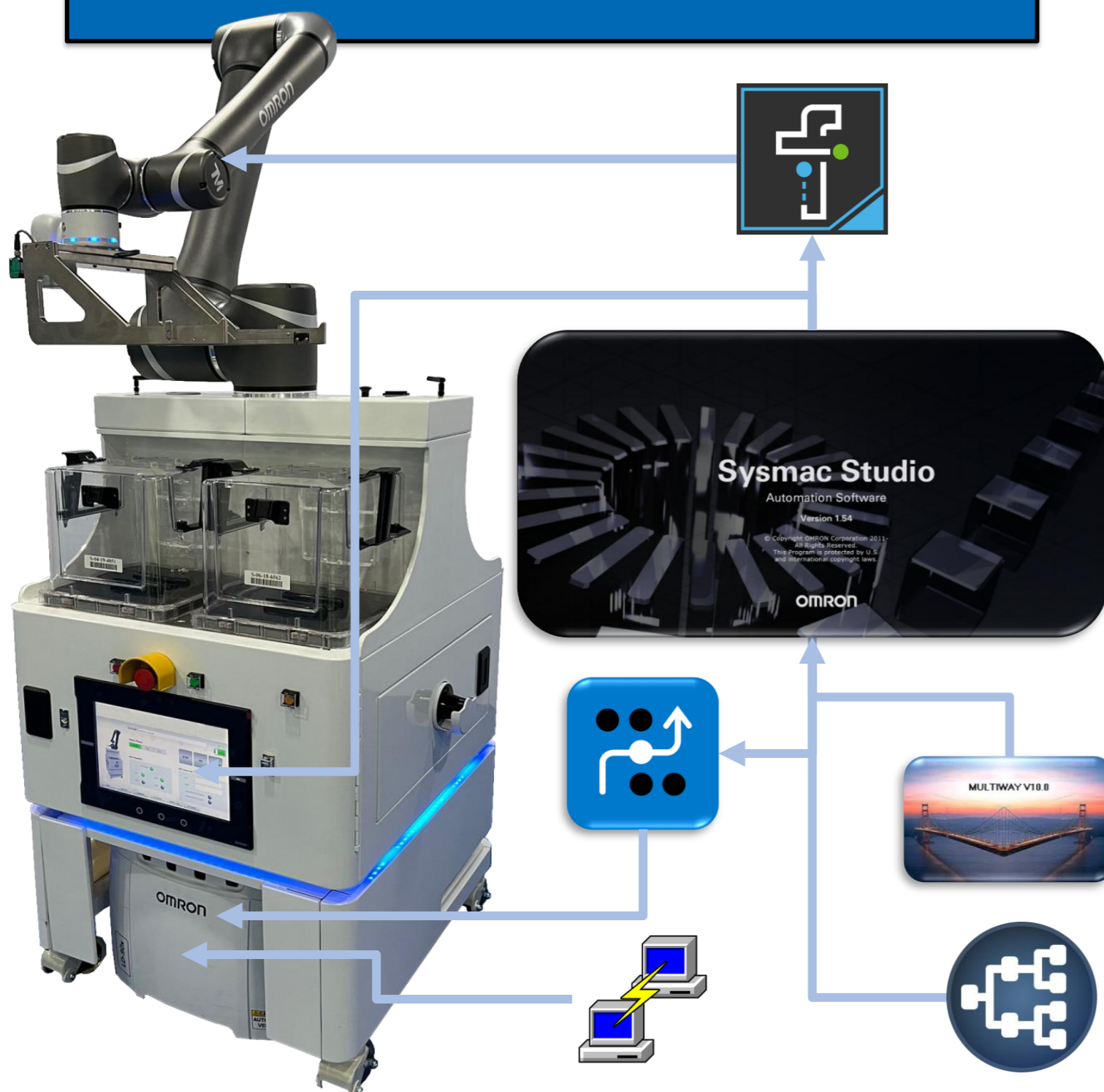
OMRON SG Department

JOB SCOPE

- Provided on-site customer **support**.
- Monitored **deployed robotics solutions**.
- Triaged customer-reported incidents, reproduced issues, and **verified fixes**.
- Performed in-lab **acceptance testing**.
- **Documented** findings and updated status.

INTERNSHIP LEARNING JOURNEY

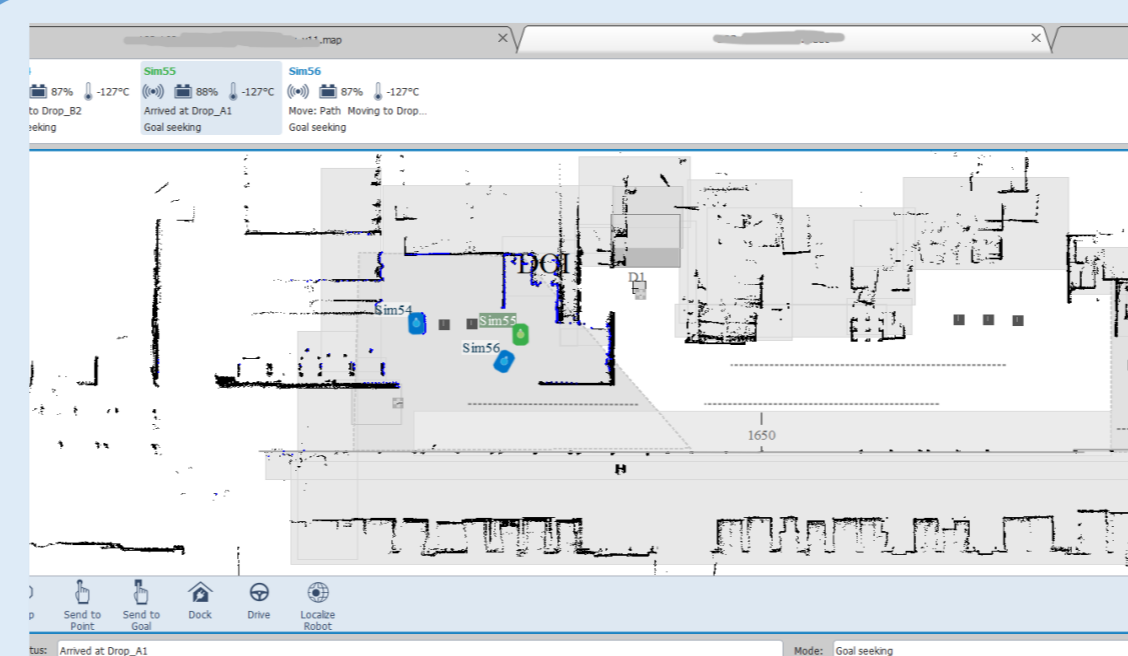
PROJECTS & TASKS



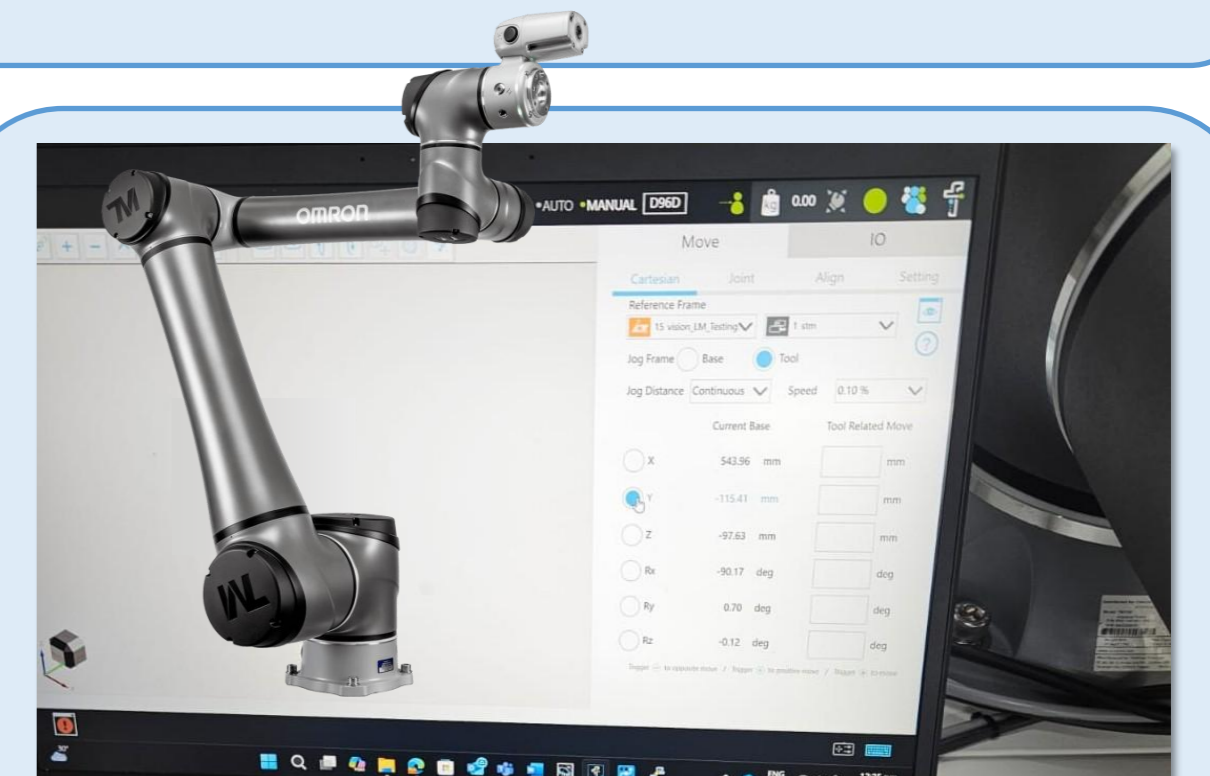
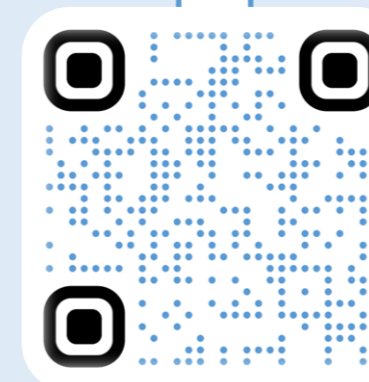
Developed a generic CPP Inference Application Programming Interface (API) for Open Neural Network Exchange (ONNX) formats **integrated** with OMRON vision controllers built on ONNX Runtime (ORT) for **optimization** of inference speed.



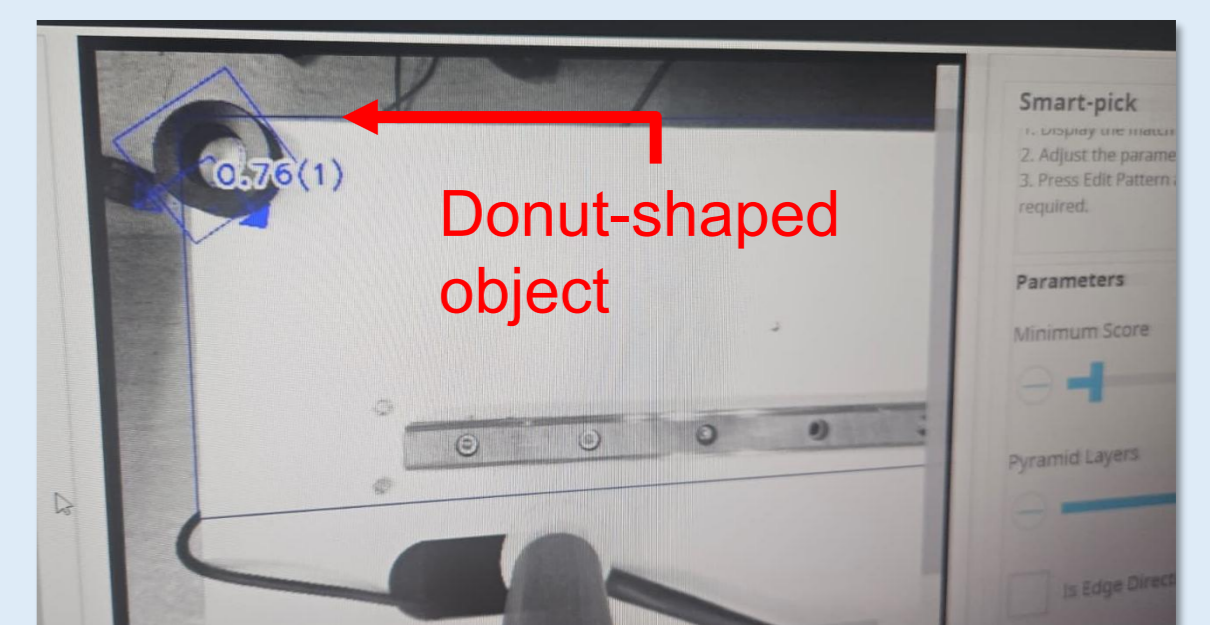
Wrote a script for an automated **2D imaging pipeline** of OMRON SENTECH Liquid Lens Industrial Cameras using Python packages for **processing** and **device control**.



Created **Digital Twin** simulation scenarios in **Mobile Planner software** using Virtual Fleet Manager (VFM) for **path-planning** and **traffic management** of Autonomous Mobile Robots (AMRs) (green and blue)



Built Pick-and-Place routines in **TMFlow software** on OMRON TM CoBot and delivered stakeholder **Proof-Of-Concept (POC) Demonstration** videos for picking objects with different vision techniques.



Multiple vision techniques in **TMFlow software**, such as

1. Object Servoing
2. Smart-Pick
3. Object Positioning

were utilized to achieve the highest accuracy with a 2mm tolerance for picking donut-shaped objects.



1. Mobile Manipulator (MoMa) robot introduces **Industrial Automation** of wafer cassette handling, replacing a previously labour-intensive process.

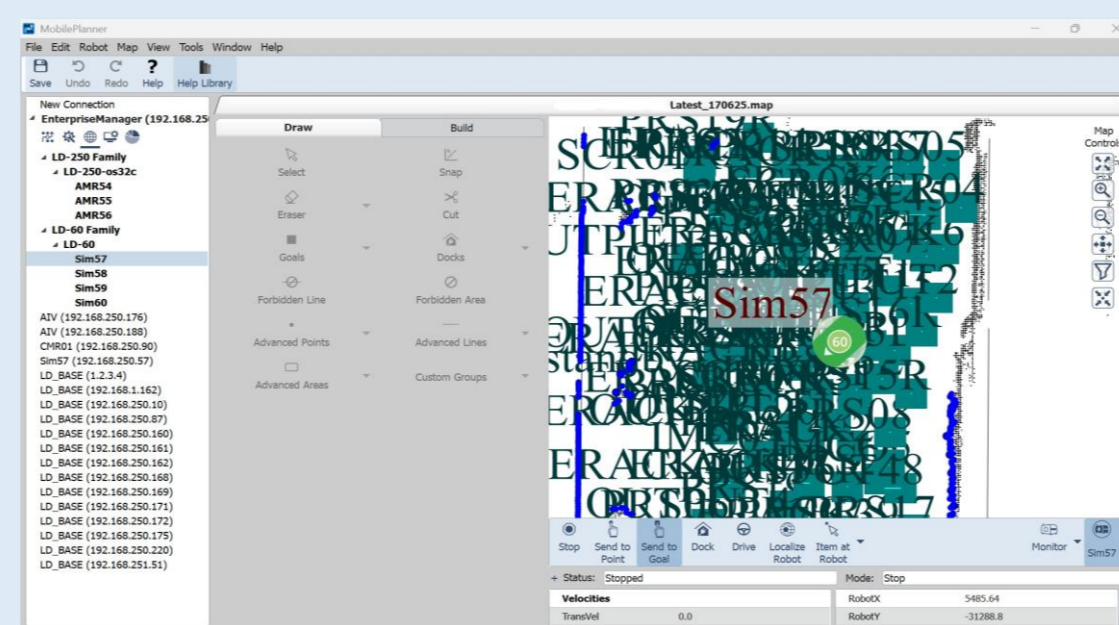
2. Wrote **PLC program** for **decision-making & navigation stack** and mapped environment for **traversal** and **docking**.

3. Taught Pick-and-Place routines at defined pickup/dropoff locations and performed end-to-end **integration** with error-recovery sequences **implemented**.

EXPERIENCE

Working alongside engineers gave me exposure to *professional industry experience* contrasting beyond being an *academic* in a classroom.

- Adopting an **open, critical** mind by asking engineers questions to clarify any assumptions early.
- **Relearning** to apply what was taught in an unfamiliar and new environment and **translating theory into application**.
- The **learning never stops**.



Numerous goals (Dark Green Boxes) were created in **Mobile Planner software** over the course of writing multiple iterations of the **PLC program** for in-lab **validation** of **motion trajectories** prior to site **deployment**.

