

# Rayner Liew Ruiheng

(+65) 9118 4938 | [raynerliew.rh@gmail.com](mailto:raynerliew.rh@gmail.com) | [linkedin.com/in/raynerliew](https://www.linkedin.com/in/raynerliew) | [raynerliew.github.io](https://github.com/raynerliew)

## WORK EXPERIENCE

### A\*STAR Advanced Remanufacturing and Technology Centre (ARTC)

August 2023 - April 2024

Robotics Software Engineer Intern - Linux, C++, Bash, Git, Docker

\*\*Worked with minimal guidance, also collaborating with a research scientist on a multi-robot task allocation algorithm

- Designed and built asynchronous behavior trees in C++ using BehaviorTree.CPP for efficient robot task planning
- Implemented docking in C++ for robots interfacing with a fleet manager, enabling seamless robot operations
- Created Bash scripts to easily setup FastDDS communication with robots, and to automate fleet manager operations
- Integrated a quadruped robot (QR) with a fleet manager utilizing CycloneDDS, enabling monitoring and dispatch
- Containerized the QR's development workspace using Docker to overcome incompatibility with the fleet manager
- Presented the QR's capabilities with the fleet manager to technical team members at a monthly group meeting
- Took the initiative to update documentation of multiple repositories for a smoother onboarding for new team members

### NCS

May 2023 - July 2023

Robotics Software Engineer Intern - Linux, C++, Python, Git

\*\*Interned concurrently with school coursework, showcasing strong time management and adaptability

- Quickly learned ROS 1 in the first week and guided fellow interns in its usage
- Integrated a C++ ROS 1 ultrasonic sensor package with a robot using RS485 serial for enhanced collision detection
- Debugged a C++ ROSserial Arduino sketch to solve compatibility issues with multiple time of flight sensors
- Developed a Python ROS 1 mast service using MODBUS serial to provide precise control of a robot's linear actuator
- Documented the deployment process of the ultrasonic sensor package and the mast service for ease of use

### ST Engineering Electronics (Training & Simulation Systems)

May 2018 - July 2018

Assistant Software Engineer Intern - PHP, MySQL, Git

\*\*Interned while waiting for NS, demonstrating a proactive attitude towards personal and professional development

- Implemented a MySQL database to show aggregate training session data with drill-down for actionable insights
- Presented the VR procedural trainer at the 2018 SkillsFuture Festival, contributing to public awareness

### Centre for Healthy and Sustainable Cities (NTU)

March 2017 - May 2017

Software Engineer Intern - C#, Unity Engine, Git

- Developed a Kinect exergame to engage upper body mobility, positively impacting the lives of elderlies in 5 countries
- Presented the developed game to non-technical stakeholders at Ng Teng Fong General Hospital, fostering collaboration

## PROJECTS

### 2D Platformer Game (SIT - DigiPen Project)

Sept 2021 - April 2022

Tech Lead - C++, ImGui, Git

- Led a team of 3 programmers and collaborated with 2 designers to create a 2D game from scratch
- Designed and developed the ECS architecture of a custom game engine in C++, ensuring scalability and modularity
- Built a level editor using C++ and ImGui to streamline game level creation, modification and testing
- Serialized and deserialized the game levels using C++ and RapidJson to ensure a smooth workflow

## SKILLS

**Programming Languages:** C++, Python, Bash

**Tools/Frameworks/Technologies:** Linux, Git, Qt, Docker, MySQL, ImGui, Unity Engine

## EDUCATION

### Singapore Institute of Technology (SIT) - DigiPen Institute of Technology Singapore

Sept 2020 - April 2024

Bachelor of Science in Computer Science in Real-Time Interactive Simulation

### Nanyang Polytechnic

April 2015 - March 2018

Diploma in Game Development and Technology

## ACHIEVEMENTS/CLUB AWARDS

- Attended ROS meetups to stay updated with the robotics industry
- Selected for SIT Leadership training; served as Logistics Head for SIT Magical Hearts (AY 21/22)
- Won SIT Outstanding Service Learning Club Award, Exemplary Volunteerism Award from Children's Cancer Foundation