# Rayner Liew Ruiheng

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## WORK EXPERIENCE

**Ultrast Medtech**                                                                                        May 2024 - Present
Software Engineer - Windows, C++, Qt, Git

**A*STAR Advanced Remanufacturing and Technology Centre (ARTC)**          August 2023 - April 2024
Robotics Software Engineer Intern - Linux, C++, Bash, ROS 2, Docker, Git
**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, ROS 1, Git
**Interned concurrently with school coursework, showcasing strong time management and adaptability
- 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

**ST Engineering Electronics (Training & Simulation Systems)**                          May 2018 - July 2018
Assistant Software Engineer Intern - Windows, 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 - Windows, 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 - Windows, C++, ImGui, Git
- Led a team of 3 programmers and collaborated with 2 designers to create a custom game engine and a 2D game
- Designed and developed the ECS architecture of the 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, ROS 1, ROS 2

## 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

- Attendee of ROS meetups to connect and 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