

Ting-Shan Huang (黃定山)

SECOND YEAR GRADUATE STUDENT

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Research Overview

Space Lab (National Cheng Kung University)

Tainan City, Taiwan

M.S. IN DEPARTMENT OF ELECTRICAL ENGINEERING

Jul. 2022 - Present

- I study in Satellite Research Laboratory - [SPACELAB website](#)
- Developed IoT payload(Internet of Thing) for the space system of Lilium-1.

Lilium-1 CubeSat's mission objective is to demonstrate Internet of Things CubeSat communication technology and in-orbit intelligent remote sensing data processing technology. I am currently researching IoT information security, which is related to computing trust algorithms between IoT devices. My master's thesis delves into the realm of information security, exploring the amalgamation of low-earth orbit satellite characteristics with the conventional framework of edge computing architecture.

Education

National Cheng Kung University (NCKU)

Tainan City, Taiwan

B.S. IN DEPARTMENT OF MECHANICAL ENGINEERING

Sep. 2017 - Jun. 2022

- I was ranked in the 19th percentile within my mechanical engineering department.
- Recipient of '62 Chen Mao-Qiang Scholarship, awarded a grant of \$50,000 NTD.
- Participate in [2019 Formula SAE Japan - Monozukuri Design Competition](#) and successfully advanced to the second round.

Skills

General Modern C++(17), Modern C(99), Python 3, LaTeX

Linux GUN Radio

Other Git, Docker

Languages Mandarin (native), English (intermediate)

Projects

The implementation of audio EdgeAI in the embedded system

Side Project

MAIN DEVELOPER/LEADER

Jun. 2023 - Present

- Developing a robot with edge AI capabilities using STM32.
- To enable precise audio recognition within the device, we integrate a digital signal processing algorithm with a lightweight model in MCU.
- It also entails the use of an Android application for robot command and mission control.
- https://github.com/Sun970053/IoT_Spider_End_Node

RISC-V 3-stage pipeline processor (Computer Architecture)

NCKU

FORK IN GITHUB

Sep. 2023 - Jan. 2024

- Implement A (atomic) extension for [srv32^{MIT}](#) and verify with [FreeRTOS](#).

Work Experience

Posiflex Technology inc.

Taipei City, Taiwan

INTERN ENGINEER

Jun. 2020 - Aug. 2020

- I endeavored to enhance the original point-of-service device by redesigning and rigorously verifying its mechanical structure for real-world reliability.

StarLight Aerospace LTD.

SOFTWARE ENGINEER

Tainan City, Taiwan

Nov. 2023 - Present

- I am currently in the process of developing a Telemetry, Tracking & Command (TT&C) board for a Low-Earth Orbit Satellite.
- I have developed API for the transceiver on our TT&C board to communication with the MCU. The board assumes a pivotal role as a subsystem within the entire satellite system, actively interacting with the onboard computer (OBC).
- This project represents a collaborative relationship involving student researcher and the company, and we look forward to creating a new commercial product related to the TT&C control module in the future.

Honors & Awards

DOMESTIC AWARDS

- | | | |
|-----------|---|-----------------|
| Jul. 2020 | Bronze Prize in Industrial Internet of Things (IIoT) Category,
Ministry of Education Second Annual Smart Internet of Things (IoT) Competition | Taipei, Taiwan |
| Dec. 2023 | 2nd Place,
National Intelligent Innovation and Cross-Field Integrated Competition in 2023 | Taoyuan, Taiwan |
| Dec. 2023 | Special Award for Cross-Field Integration,
National Intelligent Innovation and Cross-Field Integrated Competition in 2023 | Taoyuan, Taiwan |

Speaker

The sixth ground station/ground sensor terminal workshop

Thimphu, Bhutan

PRESENTER FOR SATELLITE GROUND STATION

Mar. 2023

- As a speaker at this workshop, I presented the ongoing development progress and current technical features of the National Cheng Kung University's (NCKU) satellite ground station. Additionally, I aim to foster an exchange of technical knowledge with participants from diverse countries.
- Develop a mobile ground sensor terminal with a LoRa module to communicate with the CubeSat in Low-Earth Orbit.

Relevant Courses

Object Oriented Programming And Its Applications (A)

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Sep. 2021 - Jan. 2022

- Develop an accounting application in C++ using object-oriented programming (OOP).

Analysis And Implementation of Embedded Operating Systems (A+)

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Feb. 2023 - Jun. 2023

- Using [FreeRTOS](#) to develop IoT environment sensing devices.
- Define packet format and facilitate communication between IoT devices using the LoRa technique.

Computer Architecture

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Sep. 2023 - Jan. 2024

- RISC-V instruction, datapath, pipeline, cache, multithreading and synchronization.
- Validate and analyze the performance of the assembly code I wrote using [rv32emu](#) to enhance the original program and make comparisons.