Nathanael Richard Ha

Biomechatronics Engineering Student at NTU

📍 Taipei, Taiwan

I'm Nathanael Richard Ha Hanes, a Biomechatronics Engineering student at National Taiwan University. I'm passionate about programming and engineering, with a focus on robotics, AI, and software engineering. I've developed strong leadership, communication, and adaptability skills through club involvement and work experience. I've also gained business expertise and engineering experience as a Marketing Specialist at WillStudy and as a Software Engineering Intern at Instant NanoBiosensors. Additionally, I have joined the Robots and Medical Mechatronics Lab (RMML) in the Department of Biomechatronics Engineering to gain research experience and deepen my knowledge in the field of robotics.

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Work Experience

Software and Firmware Engineer
Waterloo Reality Labs

Sept 2024 - Present
Waterloo, Canada

- Gained hands-on experience in Unity Engine for building interactive 3D applications, scripting, and object-oriented programming in C#.
- Built functionality for hand tracking and gesture recognition using Meta SDK, with exposure to GitHub version control and VR application development.
- Leveraged Scikit-Learn to implement AUC-ROC and AUC-PR metrics, significantly improving the accuracy tracking of the existing PyTorch model, achieving consistently high values—0.9998-1.0000 for AUC-ROC and 0.9996-0.9999 for AUC-PR.

Software Engineer
Instant NanoBiosensors

Jun 2024 - Aug 2024

Internship
Taipei, Taiwan

- Developed robotic automation systems for Brooks PreciseFlex 400 robot arm using telnet over LAN for control and calibration.
- Built a Node.js application for TCP Command Server communication and automated cabinet operations with Python, incorporating threading and queue data structures; managed code with Git.
- Created Python classes for real-time monitoring of the cabinet states.
- Utilized SQL for database operations and normalization; wrote documentation for troubleshooting and code functionality. Furthermore, I explored STM32F103C8T6 microcontrollers for circuit testing and fan performance analysis.

GIS GPDA Officer
國立台灣大學 National Taiwan University

Sept 2023 - July 2024
Taipei, Taiwan

- As GPDA (Global Partnerships and Delegate Affairs), we managed global partnerships and delegate affairs, such as promoting GIS (Global Initiatives Symposium) Taiwan 2024 at Mahidol University, Thailand, and inviting attendees to join our summer event in Taiwan.
- Managed delegate affairs and global partnerships using Gmail and Excel, collaborating with organizations like the Canadian Trade Office in Taipei.
- Organized key events, including Day 0 with topics like AI, Sustainable Finance, and Smart Cities, and a Cultural Festival for cultural exchange.
- Emceed the AI Keynote Speech event for around 150 participants.

EMI TA Helper
國立台灣大學 National Taiwan University

August 2023 - June 2024
Taipei, Taiwan

As an EMI (English as a Medium of Instruction) TA Helper, I assist TAs (Teaching Assistants) with how to become professional EMI TAs in their respective courses.

- Engage EMI TAs in discussions to refine and practice useful English phrases for their job, seeking their feedback on applicability.
- Foster collaboration through scenario-based training to help TAs learn how to support troubled students and maintain an open-door feedback policy.
- Facilitate a smooth student-to-TA transition by involving TAs in decision-making.

Technology Department Cadre (學術部幹部)

NTUAI

June 2023 - June 2024
Taipei, Taiwan

The Technology Department takes on the role of managing projects related to the democratization of AI and other events.

Activities that I did during my time as a Technology Department Cadre:

- Acted as a team leader in presenting a CVPR paper in detail to lots of people.
- I became a lecturer in a class about the introduction of AI and AI tools, like Gamma AI, ChatGPT, and ChatPDF. In the following semester, I also lectured about the basics of Python and the Introduction to Machine Learning to about 10 people.

Marketing Specialist

留學計畫 WillStudy

June 2023 - Sep 2023

Internship
Taipei, Taiwan

My job as a Marketing Specialist intern entails writing all sorts of articles and then using SEO (Search Engine Optimization) and Google's data analytics, as well as performing some data analysis and changing the articles accordingly to make them optimized on the Google search engine.

- Overseas Study Articles: Wrote at least 10 articles about my study-in-Taiwan experience and useful information about Taiwan overall.
- Interviewing 5 People: Researching, writing scripts, and conducting interviews.

Education

Aug 2022 - Jun 2026
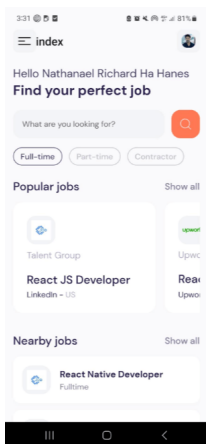### National Taiwan University
Biomechatronics Engineering

Sept 2024 - Dec 2024 (Exchange Student)
University of Waterloo
Mechatronics Engineering

Projects

Mobile Job Search App

This job search application uses the React Native framework while fetching an API from the RapidAPI.com website. This application was also coded using Javascript, HTML, and CSS as its main programming language.

GitHub Code:
https://github.com/Nathanael349/My-Application-Project/tree/master

Information on Projects: (19) Projects | Nathanael Richard (夏國龍) Ha Hanes | LinkedIn

Line Tracking and Object Avoidance Robot

Collaborated on a two-person project to design and develop a Line Tracking and Object Avoidance Robot using advanced algorithm logic and hardware integration. The project involved programming infrared sensors for precise line tracking and implementing distance measurement sensors for effective obstacle avoidance.

SOLIDWORKS Tractor Project

Designed and modeled a Kubota L2202DT tractor using SOLIDWORKS, creating 32 detailed parts and assembling them into a comprehensive 3D model. The project involved taking precise measurements of the real tractor, ensuring accuracy in the CAD model.

Skills

- Python and C++
- JavaScript and HTML/CSS
- PyTorch and MATLAB/Simulink
- Unity/C#

Languages

- English — Native or Bilingual
- Indonesian — Native or Bilingual
- Chinese — Intermediate
- Japanese — Beginner