

# Hoi Yan Ian Heung | 香愷仁

GitHub: <https://github.com/iaheung> | Portfolio: <https://iaheung.github.io> | Email: [ianhyheung@gmail.com](mailto:ianhyheung@gmail.com)

## Experience

### Data Consultant

Davidson, NC, USA

Data CATS

08/2023 - Present

- Deliver data analytics and machine learning services for academic faculty, student researchers, and local companies
- Design and facilitate workshops focused on enhancing participant skills in AI, data science, and machine learning

### Undergraduate Research Associate

Davidson, NC, USA

Algorithms for Learning in Physics Applications (ALPhA)

08/2023 - Present

- Rejoined research group to advance the development of 3D convolutional neural networks (CNNs) for particle classification
- Conduct preprocessing and sanitization of particle beam datasets for robust model training and analysis
- Implement various 3D Sparse Tensor Network frameworks to enhance computational efficiency and predictive accuracy

### Undergraduate Research Associate

Davidson, NC, USA

Algorithms for Learning in Physics Applications (ALPhA)

01/2022 - 08/2022

- Spearheaded the development of 2D and 3D CNNs to enhance particle classification accuracy in physics experiments
- Collaborated with the Facility for Rare Isotope Beams for generation of Monte Carlo particle track data for model training
- Presented work at the 2022 Verna Miller Case Symposium at Davidson College

### Research Internship

Okinawa, Japan

Okinawa Institute of Science and Technology Graduate University

05/2023 - 08/2023

- Selected to a prestigious research internship program that accepts a limited number of undergraduate and graduate students
- Engaged in research in the Experimental Quantum Information Physics Unit under Assistant Professor Takahashi Hiroki
- Engineered a PID controller on an FPGA board utilizing HDL programming, enhancing laser frequency stabilization
- Developed FIR and IIR digital filters to minimize background noise, optimizing the PID controller performance

### Undergraduate Research Associate

Davidson, NC, USA

Davidson Research Initiative

05/2022 - 08/2022

- Identified radioisotopes and analyzed radioactivity of soil samples from Lake Norman through gamma ray spectroscopy
- Engineered and executed gamma-ray emission simulations utilizing GEANT-4 software to assess detector efficiency
- Transformed raw detection data into 3D histograms for analysis using the CERN-ROOT data analysis framework
- Presented work at 2022 Physics Congress, and 2022 Fall Meeting of the Division of Nuclear Physics

## Education

### Davidson College

Davidson, NC, USA

Bachelor of Science, Physics Major, Computer Science Minor

08/2020 – Present

- Expected Graduation: 05/2024 | GPA: 3.9
- Advanced Coursework: Computational Physics, Data Structures, Quantum Mechanics, Electronics and Instrumentation

### Temple University Japan Campus

Tokyo, Japan

Spring 2023 Study Abroad

01/2023 - 04/2023

- Abroad Coursework GPA: 3.9

## Extracurricular Activities

### Founder and President

Davidson, NC, USA

Davidson College Hong Kong Society

09/2022 - Present

- Collaborate with board members to host cultural events to showcase Hong Kong culture to the Davidson College community
- Development of a supportive network for Hong Kong students yet to adapt to American collegiate environment

### Founder and President

Davidson, NC, USA

Davidson College Badminton Club

10/2021 - Present

- Organize regular training sessions to enhance team performance and prepare for intercollegiate badminton tournaments
- Provide personalized coaching to new members on fundamentals, strategic gameplay, and physical conditioning

## Programming Languages, Software, Skills

Main Programming Skills:

Bash Scripting, Python, PyTorch, TensorFlow, Command Line, Linux

Proficient Programming Languages:

C, C++, Java, Kotlin, SQL, Verilog

Software:

Android Studio, CERN ROOT, GEANT-4, MATLAB, Microsoft Excel, Xilinx Vivado

Skills:

Data Analytics & Processings, Machine Learning, Nuclear Physics, Signal Processing

## Languages and Interests

Languages:

Native in Cantonese, English, Mandarin | Fluent in Japanese (JLPT N2) | Beginner in Korean

Personal Interests:

Baseball, Basketball, Badminton, Cooking, Football, Language Learning, Travelling, Violin