SIHUN HWANG

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EDUCATIONS

Imperial College London, London, UK — Oct 2022 — Jun 2025
BSc Physics with Theoretical physics

- 1st Year (76.49%); Electives: Mathematical analysis (84.00%)
- 2nd Year (72.74%); Electives: Mathematical methods (100.00%), Sun, stars and planet (68.18%), Philosophy and the human sciences (PASS)
- 3rd Year ; Electives: Group theory, General relativity, Foundations of quantum mechanics, BSc project

Pohang University of Science and Technology (POSTECH), Pohang, South Korea — Feb 2022 — Sep 2022
Bachelor of Sciences (Dropped out)
Modules: Calculus, Physics, Chemistry, Special relativity, Linear algebra, Practical sciences, Writing

Bellerbys College, Brighton, UK — Sep 2018 — Jun 2021
A-Levels
Physics (A*), Further Mathematics (A*), Chemistry (A*), Mathematics (A*)

EXPERIENCES

Co-founder, President — London, United Kingdom
Coding Society at Imperial College — Jul 2023 - Oct 2024

- Founded an unofficial society for Leetcode style recreational coding puzzles discussions.
- See the detailed process: `https://sihunhwang.github.io/blog_coding_society.html`
- Led meetings (average attendance of 8 people) and group chat for discussion.
- Main focus of our study was dynamic programming.

Software Engineering Internship — Incheon, South Korea
Moornmo — Jul 2023 - Oct 2023

- ShapeAI: developed the backend for a website that allows one to try out various ML models including different structures of neural network with simple GUI.
- Advanced Planning and Scheduling: Added BOM (Bills of Material) logic into the system.

Software Engineering Internship — Incheon, South Korea
Moornmo — Jul 2021 - Feb 2022

- Developed an advanced planning and scheduling system for factories by implementing a Q-learning algorithm.
- Advised clients on production process and helped automating their factories.

CONFERENCES

Warwick Imperial Mathematics Conference (WIMP) — Nov 2024
Title: Witt Algebra in Conformal Field Theory
Talk Video Link: `https://youtu.be/4qE_dNfJbGI`

PROJECTS

Conformal Field Theory Group Study — Jul 2024 - Oct 2024
Supervisor: Prof. Hee-Cheol Kim
Notes: `https://sihunhwang.github.io/notes_conformal_field_theory.html`
Reading course on Conformal field theory with 3 students from Postech under Prof. Hee-Cheol Kim. In weekly meetings, we took turn presenting what we had learnt.

Meow GPT — Oct 2023
Presentation Video Link: `https://devpost.com/software/meowgpt-team-number-on140`
IBM Z Datathon: our project was classifying cats' voices by their emotions and generating generic cats' voices with corresponding emotions. I worked on generating voices with autoencoder and convolutional neural network.

Brachistochrone through the Earth — Jul 2023 - Sep 2023
Supervisor: Dr. Frank Berkshire
Paper Link: `https://drive.google.com/file/d/1fMNOdyFuWzWiXmXja1IATrghqiGW2yp6/view?usp=sharing`

Abstract: In this study, we explore the historical context of the brachistochrone problem and extend it to address the concept of a "gravity train," examining potential tunnel paths through the Earth. We establish that a hypocycloid serves as the terrestrial brachistochrone within a uniform average density model of the Earth. Employing the Preliminary Reference Earth Model (PREM). We numerically compute the brachistochrone, revealing a root-mean-square error of just 4.2 minutes when comparing journey times between the uniform density model and PREM, with the uniform density model consistently predicting shorter durations. Additionally, we analyse the discomfort associated with these paths, employing Anderson's measure of discomfort. Our findings show that a straight path is more "comfortable" than a hypocycloid, although we conclude that this metric is inadequate for identifying the least uncomfortable journey.

Wireless Communication Mar 2023 - Jun 2023
Presentation Video Link: `https://youtu.be/clC798SODDc?si=uP3CZK-GJadCC1RN`
Summer project for 1st year physicists at Imperial.

- Built an EM wave transmitter and a receiver.
- Built a filter circuit to reduce noise.
- Implemented encoding and decoding software which is connected to antennas on Arduino.

My work was mainly focused on algorithms for encoding, decoding information and controlling microchips to generate and collect data.

CERTIFICATES

Algorithmic Trading Course Certificate Issued Dec 2022
Imperial College Algorithmic Trading Society
Certificate Link: `https://drive.google.com/file/d/1D60EEhfNs0QFYvZjltik8kFCGZq7guR6/view`
Market Prediction, Time Series Data Analysis, Machine Learning Techniques.

CS50's Introduction to Artificial Intelligence with Python Issued Dec 2022
Harvard CS50
Certificate Link: `https://certificates.cs50.io/94f2b44c-f5ae-4f7f-95a7-5d9bd5ec579f.pdf?size=letter`
Depth First Search, Breadth First Search, Deep Neural Networks, Pattern Recognition, Natural Language Processing.