

Howard Cheung

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EDUCATION

University of Warwick

Coventry, West Midlands, UK

Master of Engineering (MEng) in Computer Science

Sep. 2023 – Jul. 2027

- Achieved First Class Honours in Year 1 (81%) and Year 2 (78%).
- Relevant Modules: Data Structures & Algorithms, Functional Programming (Haskell), Computer Organisation & Architecture, OS & Computer Networks, Cyber Security, Databases, AI, Formal Languages & Automata Theory.

Queen Ethelburga's Collegiate

York, North Yorkshire, UK

*A-Levels: A*A*A*A*A* including Maths and Further Maths, GCSEs: 9999998876*

Sep. 2018 – Jun. 2023

EXPERIENCE

Undergraduate Researcher (URSS)

Coventry, West Midlands, UK

University of Warwick

Jul. 2025 – Present

- Proposed and secured independent research funding to investigate quantum-native cryptography under the supervision of Dr. Matthias C. Caro, focusing on security guarantees derived from quantum mechanics rather than computational hardness.
- Self-learned quantum information theory (density matrices, entanglement, general measurements) and explored quantum cryptographic protocols including quantum OTP, secret sharing, BB'84 QKD, and secure multi-party protocols.
- Developing a case study on quantum cryptographic protocols in blockchains like Ethereum and Bitcoin, analysing how QKD could replace RSA/ECC and how entanglement-based primitives could enhance consensus and validator communication.
- Producing a formal research paper in \LaTeX and maintaining a public blog to document conceptual insights and mathematical intuitions as part of the project's outreach component.

Information Technology Trainee

Cotai, Macau

Wynn Palace

Sep. 2024

- Adapted quickly across 9 IT teams, learning key roles, showcasing fast learning, teamwork, and strong communication skills.
- Conducted Intelligent Document Processing (IDP) to automate the extraction of key transaction data from ~2000 scanned slips using private cloud AI solutions.
- Assisted the cybersecurity team with vulnerability scans using Tenable, automated logs via Splunk, and enforced data loss protection (DLP) for ~2500 employees across 10+ departments.
- Automated data retrieval in Genesis Customer Management (GCM) system with a UFT script, streamlining reporting for ~150 guests.

PROJECTS

Crisis Compass: Disaster Response Platform | *Flask, Python, Fetch.ai, SQLite, Geopandas*

Oct. 2024

- Collaborated in a team of 4 to build an AI-powered platform in a 25-hour hackathon, matching community donations with victims' needs in real time using Fetch.ai's uAgents and a SQLite database for efficient, location-based resource allocation.
- Enabled victims to enter location and resource needs for more immediate help, integrating a geolocation AI agent with Google Places API via Fetch.ai agents to locate nearby resources instantly.
- Awarded Smartest AI Agent Prize at WHACK 2024 (sponsored by Fetch.ai), impressing 6 judges out of ~40 teams for our AI-driven crisis resource matching platform.

MoodyBlue: News and Sentiment Analyser | *Flask, HTML, CSS, JavaScript*

Aug. 2024 – Sep. 2024

- Built a full-stack web application for real-time trading analysis of ~1,000 major stocks and indices in the US market, using Flask for back-end services and HTML, CSS, and JavaScript for the front-end.
- Utilised GDELT to aggregate 50+ relevant global news articles, preprocessed them using newspaper3k, and analysed the data with the OpenAI API to generate sentiment scores for each article as well as an overall lateral analysis.
- Created a total weighted sentiment score formula based on the relevance, professionalism, and credibility of each article, providing comprehensive sentiment insights for users.

Warwick+ Movie Database | *Java, \LaTeX*

Feb. 2024 – Mar. 2024

- Developed 5 custom data structures (AVL tree, array list, hash map, doubly linked list, and hash set) from scratch.
- Implemented ~70 functions for data manipulation with the custom data structures on ~20,000 movie records, passing 152 unit tests to validate functionality, performance, and edge case handling.
- Produced a 32-page report detailing the design decisions, structure, and optimisations, with a focus on asymptotic analysis and object-oriented programming (OOP) principles. Achieved a final grade of 81%.

TECHNICAL SKILLS

Languages: Java, C/C++, Haskell, Python, SQL, HTML, CSS, JavaScript, R, Prolog, L^AT_EX, Markdown

Frameworks: Flask, JUnit, WordPress

APIs: OpenAI, Alpha Vantage, GDELT, Google Places (Fetch.ai), Geolocation AI (Fetch.ai)

Developer Tools: Git, GitHub, VS Code, Visual Studio, PyCharm, IntelliJ IDEA, Eclipse

Libraries: pandas, NumPy, Matplotlib, newspaper3k, base (Haskell), megaparsec

EXTRACURRICULARS AND AWARDS

Warwick Hackathon (WHACK)

Oct. 2024

Smartest AI Agent Prize for Crisis Compass, a disaster response platform linking resources to urgent needs.

Warwick Cantonese Society Marketing Team

Oct. 2023 – Dec. 2023

Designed and produced Instagram reels and posts to boost engagement for society events.

Top of Year Maths Award

Jun. 2023

Ranked #1 in cohort of ~250 in Maths at Queen Ethelburga's College during A-Levels.

UKMT Senior Maths Challenge

Oct. 2022 – Nov. 2022

Achieved Gold for top performance and earned Merit in the follow-up Senior Kangaroo round.