

# MengZe Hong

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## EDUCATION

Sep 2021 — Jun 2024

**BSc (Hons) Mathematics and Data Science, University of Nottingham, Malaysia Campus (UNMC)**

First Class (75%)

Statistical Models and Methods, Applied Statistical Modeling, Probability Models and Methods, Artificial Intelligence Methods, Machine Learning, Optimization, Algorithms Correctness and Efficiency

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## RESEARCH

Jan 2023 — Apr 2023

**Research Assistant**

UNMC

Research Title: Improving Students' Engagement in Learning Mathematics via Automated Assessment System

This research focused on the implementation of algorithmic and interactive mathematics assessments and studied their potential to enhance personalized learning experiences. The goal is to determine whether the new assessment system improves students' confidence and engagement in solving mathematics problems.

Jun 2022 — Oct 2022

**Summer Research Internship**

UNMC

Research Title: Hill Cipher Modifications and Dynamic Cryptosystem Design

Supervisor: Dr.Chee Wing Loon, Assistant Professor, School of Mathematical Sciences

The contributions of this research are:

1. Produced a literature review report including a critical analysis of the Hill Cipher cryptosystem and evaluations of its variations proposed in past research.
2. Proposed two modifications to the Hill Cipher variations.
3. Proposed an algebraic cryptanalysis technique, extending the chosen-plaintext attack.
4. Proposed a new cryptosystem (AHC-M) with innovative, dynamic design approach to address the vulnerabilities of existing variations of the Hill Cipher cryptosystem.

A conference paper was submitted under review by IEEE International Conference on Cryptography, Security and Privacy.

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## WORK EXPERIENCE

Jan 2021 — Jan 2022

**Mathematics Tutor**

AirClass

- Implemented a flipped classroom approach for one-to-one mathematics tutoring of IGCSE and A Level students, where lessons were tailored to each student's individual needs, resulting in a more effective learning experience.
- Analyzed student performance and found an average grade improvement of two letter grades.

Sep 2019 — Jun 2021

**Web Developer**

Github Community

- Created and managed an open-source repository for a web application, contributing to local education resources sharing.
- Improved the ability to build large-scale websites and distributed databases using HTML, CSS, JavaScript and Python through the utilization of GitHub repositories in this project.

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## EXTRA-CURRICULAR ACTIVITIES

Sep 2021 — Sep 2023

**School Representative, School of Mathematical Sciences**

UNMC

- Conducted learning community forums to foster student engagement, reflect on teaching quality, and enhance the learning experience.
- Revamped course structure and module contents for Mathematics and Data Science program, resulting in improved student performance and satisfaction.
- Represented the school in student recruitment and new student onboarding, contributing to a significant increase in enrollment.
- Organized and facilitated school events to promote student involvement and community building.

Jan 2022 — Jan 2023

People Management Director, AIESEC

UNMC

- Conducted regular performance evaluations of project managers and team members, leveraging data from Key Performance Indicators (KPIs) and Membership Experience Index (MEI) metrics to identify areas for improvement and provide targeted feedback and coaching.
- Developed and implemented performance trackers and other management tools to organize and visualize large-scale databases, enabling more effective tracking and analysis of performance data.

Feb 2023 — Feb 2023

STEM Volunteer

UNMC

- Developed web simulation for the NIST Randomness Test to demonstrate the concept of random number generator and statistical test (p-values) to high school students.
- Conducted a two hours mathematics workshop in an international school, demonstrated core mathematics concepts and organised group activities with 70 high school students.

Jan 2023 — Jan 2024

Professional Memberships

International

- Member of Chinese Association for Cryptologic Research (CACR)
- Member of Quantitative Investment and Data Science Society (QIDS), HKU
- Secretary of Computer Science Society

Sep 2021 — Present

Nottingham Advantage Award

UNMC

Completed the following modules:

- Introduction to Security Investment
- Exploring Your Careers
- Science and Engineering Internship

SKILLS	Microsoft Office	Python Programming
	Academic Writing	Data Analysis (R Programming)
	LaTeX	AI / ML / NLP

LANGUAGES	Chinese	Native speaker	English	Highly proficient
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REFERENCES

Dr. Kian Wah Liew from University of Nottingham, Malaysia Campus

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Dr. Chee Wing Loon from University of Nottingham, Malaysia Campus

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