

# Zhaorun Lin, Kevin

MPhil student in Computer Science

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## SUMMARY

I'm a year 2 MPhil student at the Hong Kong University of Science and Technology (HKUST) major in Computer Science with my research interests in Blockchain, Cryptography, and their intersections. I am a member of the ALPACAS Research Group which focuses its research on theoretical computer science.

## EDUCATION

- 09/2023 – Present
- MPhil in Computer Science (HKUST)**
- Supervised by Prof. Amir K. Goharshady
- 09/2019 – 07/2023
- BEng in Computer Engineering (HKUST)**
- Minor in Big data Technology
  - Awards:** **1.** HKUST School of Engineering Scholarship **2.** Professor Samuel Chanson Best FYP Award **3.** Industry Sponsored Best FYP Award

## SKILLS

**Programming Languages:** C++, Python, Rust, Solidity, JavaScript, HTML.

**Technologies:** AI · Machine Learning Algorithms · Big Data Technology · Algorithms · Data Structures · Ethereum · Blockchain · Smart Contract · Cryptosystems

**Languages:** English - IELTS 7.5, Mandarin, Cantonese - native

## PUBLICATIONS

(Authors ordered alphabetically)

- 2025
- Improved Gas Optimization of Smart Contracts**
- T. Barakbayeva, S. Farokhnia, A. K. Goharshady, P. Li, Z. Lin
- FSEN (accepted)
- 2024
- Blind Vote: Economical and Secret Blockchain-based Voting**
- A.K. Goharshady, Z. Lin
- IEEE Blockchain

## INTERNSHIPS

- 07/2023 – 09/2023
- Research Assistant**
- Prof. Gary Chan's Lab, HKUST
- Worked on a vacancy detection system for smart carpark, including optimizing code and setting up environments for edge devices such as OrangePi Mini computer and Jetson Orin NX board.
  - Integrated an elderly fall detection system in a web application for displaying extracted human gesture in real time and alert in case a fall is detected.
- Edge AI / CUDA / cv2 / YOLOv8 / Django
- 07/2022 – 09/2022
- AI & Data Engineering Intern**
- Baronford & Associates
- Performed exploratory data analysis on patient datasets to draw meaningful insights and built a random forest regression model on predicting patient vitals, then optimized model using automated hyperparameter tuning by GridSearchCV.
  - Data augmentation of the patient dataset using SMOTE, RandomOversampler and GaussianCopula from SDV. The synthesized data has a high similarity of >95% in distribution and <0.5 of bivariate correlation difference.
  - Developed a MERN (MongoDB, Express, React Node.js) stack app that supports basic CRUD applications for recording information.
- MERN Stack / EDA / Random Forest Regression / Data Augmentation
- 12/2021 – 02/2022
- Junior Developer**
- Radiance Tech International Ltd.
- Designed and implemented the company's webpage using HTML, JavaScript, and CSS. Continuously improved the prototype interface and optimized user experience through trial and error and user feedback.
  - Worked in a team to build and fine-tune a Cantonese voice recognition system using DeepSpeech and CommonVoice corpus.
- HTML / JavaScript / CSS

## PROJECTS

- 09/2023 – 01/2024
- Blockchain-based E-voting system using Blind Signatures**
- Designed and implemented a voting system on blockchain (Ethereum) by utilizing the technique of blind signature. The protocol achieves untraceable anonymity and other properties such as verifiability, transparency, completeness, etc., while being at least 40% more efficient than other existing e-voting systems in terms of gas cost.
- Github
- 02/2023 – 05/2023
- 3-party Random Number Generation on Ethereum**
- Designed and implemented a decentralized protocol that achieves uniformly random number generation on blockchain. The protocol makes use of Goldwasser-Micali cryptosystem for homomorphic encryption of random numbers, RSA and commitment scheme to ensure security and privacy.
- Github
- 08/2022 – 05/2023
- Real-time Vacancy Detection System Using Fisheye Cameras (Best FYP)**
- Built a vacancy detection system for smart carparks using fisheye cameras and computer vision technologies by leveraging the state-of-the-art yolov5 model and training a convolutional neural network. The system achieves an 92.8% accuracy in identifying vacant parking slot and won the Best FYP award.
- Github