

Yun Chen TSAI

✉ yctsai@connect.ust.hk

📞 yctsai2727

☎ +852-54418187

SUMMARY

I am a Year 3 undergraduate student at HKUST, major in applied Mathematics. Experienced in academic research and currently having two research projects conducted under the supervision of professor Shing Yu LEUNG and Amir GOHARSHADY, the research area focus on different aspect of scientific computation and theoretical computer science (TCS) respectively. Proficient in programming with C/C++, Python and NodeJS. Planning to pursue a Ph.D. in TCS-related area, research interest especially focus in complexity theory, automata theory and mathematical aspect in algorithm design.

EDUCATION

Hong Kong University of Science and Technology (HKUST)

BSc in Applied Mathematics

Expected Graduation: June 2024

PUBLICATION

- Conrado, G. K., Goharshady, A. K., Kochev, K., Tsai, Y. C., Zaher, A. K. (2023). *In Exploiting the Sparseness of Control-flow and Call Graphs for Efficient and On-demand Algebraic Program Analysis*. submitted to OOPSLA.

COURSE TAKEN

Only selected courses are recorded.

MATH course

- MATH 1023 Honor Calculus I
- MATH 1024 Honor Calculus II
- MATH 2043 Honor Mathematical Analysis
- MATH 2431 Honor Probability
- MATH 3043 Honor Real Analysis

HKUST

grade: A
grade: A-
grade: A-
grade: A-
grade: A

COMP course

- COMP 2011 Programming in C++
- COMP 2012 Object-Oriented Programming and Data Structures
- COMP 2711H Honor Discrete Mathematics Tool
- COMP 3721 Theory of computation
- COMP 5711 Introduction to Advanced Algorithmic Techniques

HKUST

grade: A
grade: A+
grade: A+
grade: A
grade: A+

research course

- UROP 1100 Efficient Algorithm on Visualizing Dynamical Surface
- UROP 1100 Parameterized algorithm for static program analysis
- UROP 2100 Parameterized algorithm for static program analysis
- SCIE 3500 IRE research Project I

HKUST

grade: P*
grade: P*
grade: P*
grade: A+

RESEARCH PROJECT

Project title

Supervisor

Efficient algorithm on Visualizing Dynamical Surface

Dr. Shing Yu LEUNG

- In this project we particularly focus on developing efficient methods for visualizing the Lagrangian Coherent Structure. Several approaches have been studied including the traditional Finite time Lyapunov Exponent, Clustering approach and also comparison between local trajectories. The project is still under progress.

Parameterized Algorithm and static program analysis

Dr. Amir GOHARSHADY

- This project is focusing on improving existing method for static program analysis, in particular on automata and model checking. Our main interest is to try to reduce the complexity through parameterization since it has been exposed that most practical system has small treewidth in its control flow graph. Another focus is on the automata side since model checking can be well formulated in terms of LTL logic which is in equivalent with Büchi automata, hence a parameterized algorithm on improving time for verifying several properties like language inclusion and universality would be interesting both theoretically and practically. The project is still under progress.

Scholarship

- Chern Class Scholarship

Reference

Please contact the following professors for letter of recommendation.

Shing Yu LEUNG

✉ masyleung@ust.hk

Professor, Department of Mathematics

Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong

Amir GOHARSHADY

✉ goharshady@cse.ust.hk

Assistant Professor, Department of Computer Science and Engineering

Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong