

Yun Chen TSAI

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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. 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., Kochekov, 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.

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 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

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