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Research Interests

My research interests lie in the broad area of Programming Languages and Software Systems. I am interested in formal verification for distributed programming and for compilation, type systems, proof assistants, functional programming, and so on. I hope to develope rigorously founded theories and tools at the service of reliable software.

Education

Purdue University *West Lafayette, IN, USA*
Doctor of Philosophy student in Computer Science *Jan. 2021–now*

Hong Kong University of Science and Technology (HKUST) *Hong Kong S.A.R.*
Master of Philosophy in Computer Science and Engineering *Sept. 2018–June 2020*
Bachelor of Engineering in Computer Engineering | Minor in Robotics *Sept. 2014–June 2018*

Research Projects

Manifoldness Preserving Contraction *VisGraph Lab, CSE, HKUST*
M.Phil. thesis, advised by Prof. Quan Long *Aug. 2018–May 2020*

- Designed a new contraction method that guarantees manifold output given a manifold input using augmentation and the separation of singularities. It can be applied to geometry processing as a replacement to the conventional contraction operation which may destroy topology and produce imperfect results.

Triangle mesh simplification *VisGraph Lab, CSE, HKUST*
Advised by Prof. Quan Long *Aug. 2018–May 2020*

- Used new contraction techniques to improve triangle mesh simplification wherein traditional methods fail to effectively restrict the destruction of input topology.
- Facilitated the parallelization in the construction of Levels-of-Detail of 3D models using 2D-projection of tile boundaries.

Centralized Wireless Local Area Networks *HKUST*
Undergraduate final-year thesis, advised by Prof. Brahim Bensaou *Sept. 2017–Mar. 2018*

- Specified a centralization protocol for Wireless LANs as an (SDN) extension atop CSMA/CA to explore the improvement of resource utilization in dense indoor networks. It was partially implemented in C based on hostapd's source code and experimented on OpenWrt embedded Linux system.

Photograph capturing with drones *VisGraph Lab, CSE, HKUST*
Undergraduate Research Opportunity Program, advised by Prof. Quan Long *Aug.–Nov. 2016*

- Investigated in the application of Computer Vision and Graphics for Android devices as remote controls for drones, with a focus on human-drone interaction. An Android application was built to retrieve data from a geography database and visualize useful information on the screen according to the vision of the drone.

Professional Experience

Everest Innovation Technology (merged into Apple Inc.) *Shenzhen & Hong Kong, China*
Researcher & Software Developer *June–Aug. 2019*

- **Triangle mesh processing**: Transferred novel geometry processing techniques into *Altizure*, a world-class cloud-based 3D reconstruction platform; developed efficient mesh processing program in C++.
- **ZRPC**: Participated in the development of *ZRPC*, an RPC distributed computing framework, in Go.
- **Data management and visualization**: Developed a photographic data validation, management, and visualization desktop application in JavaScript.

Dash Serviced Suites *Hong Kong*
Part-time JavaScript Developer *Feb.–May 2018*

- **Web development**: Worked on the Web interface, API, and database management of *DASH2*, an online marketplace Web application by the startup company.

Teaching Experience

Department of Computer Science, Purdue University *West Lafayette, IN, USA*
Teaching Assistant *2021–now*

- CS24000: Programming in C, Spring 2021

Department of Computer Science and Engineering, HKUST *Hong Kong*
Teaching Assistant *2018–2019*

- COMP1021: Introduction to Computer Science, Fall 2019
- COMP3311: Database Management Systems, Fall 2018

Extracurricular Activities

ACM SIGPLAN Symposium on Principles of Programming Languages *New Orleans, LA, USA*
Student Volunteer *Jan. 2020*

- Supported event organization.

RoboMaster Robotics Competition *Shenzhen, China*
Mechanical/Computer Engineer *Feb.–Aug. 2017*

- Co-designed the mechanical structure of *Hero*, the main-force in this multi-robot contest, for RoboMaster HKUST team. Our Hero robot was controlled remotely, capable of capturing, storing and shooting bullets, and climbing onto stairs with telescopic legs.

Chinese Folk-Art Society, HKUST *Hong Kong*
IT Secretary, Executive Committee *Feb. 2015–Feb. 2016*

- Independently built the official website of our society and developed a Web application in JavaScript to assist the hosting of a knowledge competition named *Who is Still Standing*.
- Took charge of photographing and Internet platform promotions.
- Organized trips to the Yangzi, China and Dragon's Back, Hong Kong.