# Jing Lan

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## Education

**The Chinese University of Hong Kong (CUHK)**, Hong Kong, China 2022 – Present

***MPhil*** in Computer Science
*Supervisor:* Prof. James Cheng

**Sun Yat-sen University (SYSU)**, Canton, China 2018 – 2022

***BEng*** in Computer Science
*Supervisors:* Prof. Nong Xiao & Prof. Dan Huang
***GPA:* 3.9 / 4.0**

## Academic Experience

**Flavius: Disaggregated Graph OLAP Engine** @ Husky Data Lab, CUHK 2022 – Present

*core member* Advisor: Prof. James Cheng

Built an in-memory graph OLAP engine with a **disaggregated architecture**. The system optimizes for highly skewed graph workloads: high throughput for small queries and QoS for the heavy.

- A *disaggregated* layout with computer servers connected to clients, planning and scheduling queries, and cache servers caching data, executing pushdown ops (e.g., filter, aggregation) and distributed joins.
- A set of novel *Subquery* operators executing optional match, pattern filter, repeated join, etc., and a query planner translating graph queries to parallel op pipelines.
- A *configurable*, push-pull hybird query engine. Heavy queries are executed in batches to reduce resource consumption. I co-design the query controller and the *subquery* pipeline, allowing fine-grained dataflow coordination for complex graph queries (e.g., with loop structures).
- An in-database *profiling* component collecting networking, queuing, and processing statistics while messages flow down the pipeline and analyzing query workloads in a distributed context.
- A data-driven *scheduler* on-the-fly configuring the engine for performance objectives. (*ongoing*)

**Student Cluster Competitions (SCC)** @ SYSU 2020 – 2022

***leader(2021-22)**, member(2020-21)* Advisor: Prof. Dan Huang

Explored HPC systems and win contests in world-famous venues (e.g., ACM SC & European ISC)

- Managing clusters from configurable clouds (e.g., Chameleon Cloud) to supercomputers (e.g., UToronto Niagara): using package managers Spack and Modules to manage the software stack with complex dependencies and various build systems.
- Tuning system software and parallel applications by leveraging *system features*, (e.g., NUMA) and exploiting *application patterns* (e.g., I/O localities).
- In-depth optimizations from various aspects:
  - *Parallelism* resolves performance bottlenecks by adapting multi-core and GPU processing.
  - *Code optimizations* improve localities of *kernels* with tiling, vectorization, etc.

## Skills

- Programming Languages: C, C++, Python
- Platform experience: clusters, cloud, supercomputers
- Software: Slurm, Spack, Git, CMake, tmux, LaTeX, etc.
- Languages: English (TOEFL 105, S24), Mandarin

## Publications

TBD.

## Honors

*2nd Prize (top 10%), Undergraduate Scholarship* 2019, 2021

*Champion* IndySCC@Supercomputing, 2021
*Honorable Mention* SCC@ISC High Performance, 2021
*2nd Prize (3rd out of 65, and a $9000 bonus!)* Sugon Priority Research Application, 2021

## TEACHING

CSCI1540 Fundamental Computing With C++ Fall 2022

## MISCELLANEOUS

- The SYSU SCC Team: https://scc.sysu.tech
- Homepage: https://lan-jing.github.io/