Ge Shi

+1 (604) 715-9265 ⋄ shiges@sfu.ca ⋄ linkedin.com/in/geshi001

EDUCATION

Simon Fraser University   Burnaby, BC

M.Sc. in Computing Science   2021 – 2023 (expected)

  Advisor: Prof. Tianzheng Wang

  Thesis Title: Robust Optimistic Locking for Main-Memory Indexes

B.Sc. in Computing Science, *First Class with Distinction*   2018 – 2021

  CGPA: 4.26/4.33

Zhejiang University   Hangzhou, China

B.Eng. in Computer Science, *SFU-ZJU Dual Degree Program*   2016 – 2021

EXPERIENCE

Simon Fraser University   Burnaby, BC

Research Assistant, Data-Intensive Systems Lab. *Advisor*: Prof. Tianzheng Wang

- **Robust Optimistic Locking for Main-Memory Indexes** *(Under Submission)*
  - Designed and implemented a new queue-based optimistic lock based on MCS locks, with properties including compact representation and easy adoption.
  - Implemented optimistic lock coupling with the proposed lock on a main-memory B+-tree and an adaptive radix tree, improving performance up to 4x under high contention while keeping competitive performance under low contention.
- **Software Prefetching for Analytical Processing**
  - Implemented coroutine-based software prefetching for a concurrent hash table, resulting in 24% improvements in memory-intensive table equijoins.
  - Explored gem5 full-system simulation of ERMIA/CoroBase.
- **Primitive for Lock-free Persistent Memory Programming**
  - Identified and fixed a concurrency bug that could lead to incorrect recovery in a persistent multi-word compare-and-swap primitive using the durable linearizability consistency model.
  - Revisited memory reclamation protocols for persistent lock-free data structures and fixed potential memory leaks in the primitive.
- **NUMA-friendly Main-Memory Transaction Processing**
  - Implemented data-oriented transaction execution in ERMIA. Transactions were decomposed into actions and dispatched to partition-owning worker threads. Read-only transactions achieved 2.1x throughput compared with shared-everything on a dual-socket machine.

SKILLS

Languages	C/C++, Go, Haskell, JavaScript, Python, SQL, Verilog
Tools & Misc	LLVM, WebGL, SIMD Intrinsics, gem5, perf

HONORS AND AWARDS

· SFU Faculty of Applied Sciences Graduate Fellowship	May 2022
· SFU President's Honour Roll for Spring 2021	Jun 2021
· SFU Dean of Applied Sciences Convocation Medal	May 2021
· SFU Vice-President Research Undergraduate Student Research Award (VPR-USRA)	Sep 2020
· ICPC Pacific Northwest Regional, Ranking: 12/61	Nov 2019
· ICPC Pacific Northwest Regional, Ranking: 12/61	Nov 2018
· First Class Prize, ASC18 Student Supercomputer Challenge	May 2018
· Zhejiang University Second Class Scholarship for Outstanding Merits	Sep 2017