# Linsong Guo

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## EDUCATION

**University of California San Diego (UCSD)** *Sep 2022 - Present*
Ph.D. student in Computer Science and Engineering.

**Shanghai Jiao Tong University (SJTU)** *Sep 2018 - Jun 2022*
Bachelor of Engineering in Computer Science
Member of ACM Class, an elite CS program for the top 5% talented students.
GPA: 88/100

## PUBLICATIONS

Zijun Li, **Linsong Guo**, Quan Chen, Jiagan Cheng, Chuhao Xu, Zhuo Song, Tao Ma, Yong Yang, Chao Li and Minyi Guo. Help Rather Than Recycle: Alleviating Cold Startup in Serverless Computing Through Inter-Function Container Sharing. **USENIX ATC 2022** .

Zijun Li, Yushi Liu, **Linsong Guo**, Quan Chen, Jiagan Cheng, Wenli Zheng, Minyi Guo. FaaSFlow: Enable Efficient Workflow Execution for Function-as-a-Service. **ASPLOS 2022** .

Zijun Li, **Linsong Guo**, Jiagan Cheng, Quan Chen, Bingsheng He, Minyi Guo. The Serverless Computing Survey: A Technical Primer for Design Architecture. **ACM Computing Surveys**.

## RESEARCH EXPERIENCE

**WukLab, UCSD**
*Supervised by Prof. Yiying Zhang* *Sep 2022 - Present*

Currently working on **memory disaggregation**.

**Database System Group, Pennsylvania State University**
*Supervised by Prof. Xie Dong* *Jul 2021 - Dec 2021*

Explored adaptive serverless function placement for **disaggregated storage datacenters**.

**Emerging Parallel Computing Center (EPCC Lab), SJTU**
*Supervised by Prof. Quan Chen* *Jul 2020 - Jun 2021*

Addressed two critical problems in **serverless computing**:

- **Alleviating cold startup** through inter-function container sharing.
- Reducing data movement overhead in real-world **stateless workflows**.

## OTHER EXPERIENCE

**Teaching Assistant of C++ Programming Course, SJTU**
*instructed by Prof. Huiyu Weng* *Sep 2019 - Jan 2020*

**Member in ACM-ICPC Team, SJTU**
*guided by Prof. Yong Yu* *Jun 2018 - Jul 2019*

A member of a team named *Quasar*. Earned three gold medals (one as a **1st runner-up**) in ACM-ICPC Asia regional contests and one gold medal in China Collegiate Programming Contest.

## HONORS AND AWARDS

**1st Runner-Up**, ACM-ICPC Asia Regional Contest, Nakhon Pathom Site *2018*

**Gold Medal**, ACM-ICPC Asia Regional Contest, Qingdao Site *2018*

**Gold Medal**, China Collegiate Programming Contest, Guilin Site *2018*

**Silver Medal**, China Collegiate Programming Contest, Final *2018*

**Gold Medal**, ACM-ICPC invitational Contest, Xi'an Site *2019*

**Silver Medal**, National Olympiad in Informatics *2017*

**Zhiyuan Honorary Scholarship**, Award for top 5% students *2018, 2019, 2020*

**Excellence Scholarship for Undergraduates** *2019, 2020, 2021*

## PROJECTS

**Java-and-C-like Language Compiler (∼16K lines in Java)** [github]

The compiler can convert a piece of code to an AST, then to LLVM IR, and eventually to RISC-V assembly. I enhanced the compiler's back-end with numerous optimizations, including mem2reg, inlining, CSE(Common SubExpression Elimination), LICM(Loop Invariant Code Motion), SCCP(Sparse Conditional Constant Propagation), and so on.

**Replicated KV Store Based on Raft Consensus Protocol (∼1.8K lines in C++)** [github]

The replicated store could run on a cluster of servers communicated via gRPC and support basic operations such as get and put.

**RISC-V CPU with 5-Stage Pipeline (∼3.7K lines in Verilog)** [github]

To gain a better understanding of computer architecture, I added components including d-cache, i-cache, and a branch predictor combining BTB and BHT. The CPU could run successfully on an FPGA board.

## SKILLS

Programming Languages: C/C++ > Python > Java > Rust, x86 and RISC-V assembly

Hardware: Verilog, PC assembly