

## Contact

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(LinkedIn)

## Top Skills

C (Programming Language)

Data Structures

Docker Products

# Rulin Xing

Actively Seeking Full-time SDE Role | SDE Intern @ Snowflake |  
MSCS Student @ USC | Ex-SDE @ Tencent | Ex-Intern @ Amazon  
@ ByteDance @ Alibaba | @ Apache SINGA Committer  
Los Angeles, California, United States

## Summary

Hi! I'm Rulin. Currently a graduate student pursuing a Master's in Computer Science at University of Southern California, having received a Bachelor's in Computer Science from Huazhong University of Science and Technology prior.

I have extensive development experience in C++, Java and Python3. My professional journey includes a full-time SDE at Tencent, internships at Amazon, ByteDance (TikTok) and Alibaba, and an RA at NUS. And I will also intern at Snowflake this fall. Given my contributions at NUS, I was nominated as a member of the Apache Software Foundation.

Throughout these experiences, I've gained hands-on expertise in various fields, such as backend development for Taobao's recommendation system, mobile graphics engines at TikTok and Tencent, Content Delivery Network at AWS CloudFront, and Apache SINGA's distributed deep learning and machine learning training systems. I consistently collaborated effectively with team members and received positive feedback.

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## Experience

### Snowflake

Software Engineer Intern

August 2023 - Present (3 months)

Bellevue, Washington, United States

- Software Engineer Intern on Data Lake Team.

### The Apache Software Foundation

Apache Committer

June 2020 - Present (3 years 5 months)

- Member of the Apache Software Foundation.

- Core committer of Apache SINGA, which is an Apache top-level project, focusing on distributed training of deep learning and machine learning models. (ASF : The World's Largest Open Source Foundation).
- Refactored SINGA's Python front-end, substantially improving user experience in model definition and training.
- Boosted kernel execution and video memory recycling on GPU by introducing a back-end scheduler, which operates based on the computational graph generated by the model defined on the front end. Reduced the video memory consumption by 40% (on par with PyTorch).
- Nominated as The Apache Software Foundation committer given the outstanding contributions to SINGA.

## Amazon Web Services (AWS)

### Software Engineer Intern

May 2023 - August 2023 (4 months)

Seattle, Washington, United States

- Optimized the Invalidation Operation of AWS CloudFront (Content Delivery Network).
- Integrated the C++ Array Trie implementation with Java by leveraging JNI (Java Native Interface), made it accessible on the Java side, significantly enhancing performance compared to the native Java implementation.
- Refactored the logic behind wildcard invalidations by utilizing LMDB and Array Trie, resulting in 2-4x improvement in the process of invalidating files on edge servers.

## University of Southern California

### Course Producer

September 2022 - December 2022 (4 months)

Los Angeles, California, United States

- Course Producer for CSCI-570: Analysis of Algorithms.

## Tencent

### Software Engineer

March 2021 - December 2021 (10 months)

Shenzhen, Guangdong, China

- 3D mobile graphics engine development.
- Collaborated on developing next-generation graphics engine, focusing on 3D graphics and optimizations.

- Owned and released a highly sought-after fire rendering special effect that met strict performance standards and was subsequently adopted in various innovative projects.
- Designed and implemented a GPU-based 3D particle system by utilizing Compute Shaders, achieving an impressive 5x performance improvement over original 2D system, resulting in more effective particles rendering.
- Conducted extensive refactoring of asset loading, camera, mesh, morphing, Animoji systems, and the 3D rendering pipeline, significantly enhancing the engine's capabilities and overall performance.

## National University of Singapore

### Research Assistant

January 2020 - June 2020 (6 months)

Singapore

- Optimized the open-source machine learning library Apache SINGA under the supervision of Prof. Wei Wang.
- Finished degree thesis titled "Computational Graph Construction and Optimizations for Apache SINGA", got A+.

## ByteDance

### Software Engineer Intern

October 2019 - December 2019 (3 months)

Shenzhen, Guangdong, China

- 3D mobile graphics engine development.
- Formulated a procedural system for TikTok's special effects engine based on extensive research, facilitating seamless Houdini project integration.
- Devised a conversion process for Houdini's workflows, which involves transforming the workflow into a computational graph, converting data into resource files, and adapting the graphics engine to load them efficiently.
- Implemented a Lua-based workflow execution system with numerous nodes, each functionally equivalent to nodes in Houdini, enabling the engine to run Houdini's workflows effectively.
- Developed a tool to convert Houdini's VEX language to Lua with Flex/Bison, significantly enhanced the workflow execution system's capabilities, enabling the graphics engine to support running custom nodes.
- Authored an extensive technical documentation spanning 70+ pages and 20,000+ words, providing a comprehensive solution that facilitates smooth project transitions.

## Alibaba Group

### Software Engineer Intern

July 2019 - September 2019 (3 months)

Hangzhou, Zhejiang, China

- Participated in the development of the recommendation system of Taobao.
- Built an auto-tuning system for index building, optimizing parameters for better recall rate and lower latency.
- Implemented an async operator in Tensorflow framework for dense vectors index retrieval, markedly improving throughput, reducing CPU load (from 60% to 20%), and decreasing latency by processing requests on GPU.
- Spearheaded the distributed construction of indexes, expediting the delivery of the latest data to online servers, which ensured the company's capacity to keep pace with the frequent and continuous data updates during Chinese Black Friday on Nov. 11.

### Huazhong University of Science and Technology

Teaching Assistant

October 2018 - January 2019 (4 months)

Wuhan, Hubei, China

- Teaching Assistant of Data Structure.

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## Education

### University of Southern California

Master of Science - MS, Computer Science · (January 2022 - December 2023)

### National University of Singapore

2020 NGNE Programme, Computer Science · (January 2020 - June 2020)

### Huazhong University of Science and Technology

Bachelor of Engineering - BE, Computer Science and

Technology · (September 2016 - June 2020)