

SONG CHEN

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EDUCATION

University of Illinois Urbana-Champaign

Master of Engineering in Electrical and Computer Engineering

Champaign, Illinois

Aug. 2022 - Dec. 2023(Expected)

Sun Yat-sen University

Bachelor of Engineering in Computer Science and Technology

Guangzhou, China

Aug. 2016 - Jun. 2020

WORK EXPERIENCE

TikTok (ByteDance)

Apr. 2021 - Jul. 2022

Software Engineer, Backend, Full-time - User Growth

• Advertising Data Pipeline and Analytics Dashboard

- * Built a dashboard with over 200 ad-related statistics items using *Golang, MySQL & ClickHouse*, supporting data analysis for **a turnover of more than \$10 million**. Developed a permission control system to ensure data security and implemented a function to save frequently viewed statistics items, enhancing user efficiency and **reducing average user interaction time by 40%**.
- * Designed more than 10 CronJobs to integrate source data, forming an efficient and stable pipeline, catering to user needs for all types of advertising-related statistics.
- * Improved query efficiency by splitting a complex MySQL query into multiple simpler queries, **reducing the average query time by over 30%**.
- * Orchestrated an alarm system to monitor query time and check the accuracy of current statistics at regular intervals, sending alarms to specified groups when query time was too long or statistics were incorrect, ensuring the robustness and accuracy of the system, **with data accuracy exceeding 99.999%**.
- * Delivered a Tech Talk introducing system design and advertising-related terminologies. Authored the article "*Quick Start to Ad Statistics Dashboard*", speeding up the onboarding process for more than 5 new joiners.

• Data Pipeline and Dashboard for Live & Short Video Analytics

- * Developed a data pipeline and interactive dashboard with over 30 live & short video related statistics items using *Golang, MySQL & ClickHouse*, serving **over 20 MCNs** and **more than 1000 creators** in revenue and viewing statistics analysis.
- * Mentored two interns, expediting their onboarding process, and guided them in developing modules for *Douyu & Huya* related statistics.
- * Implemented caching mechanisms for frequently accessed MCNs and TikTokers' statistics, bolstering system stability and **achieving an average query time reduction by about 20%**.
- * Constructed a back-office management system for operators to control sensitive data, improving data security.

• C/C++ Based Redis-like Database Caching System

- * Designed and implemented a *Redis-like* database caching system for multiple systems in a *Linux* environment using *C/C++*, **achieving a cache hit rate of over 60%**, thereby improving overall system performance.
- * Incorporated an *Extract, Transform, Load (ETL)* layer in the caching system to accommodate varying input and output formats from different systems, leading to a marked improvement in development efficiency and **saving approximately 2 person-days** per development requirement.

• Automated UI Testing Tool

- * Implemented an automated UI testing tool using *Python & Selenium*, which automatically performed various query operations and determined whether the statistics were successfully fetched by detecting specified elements.
- * Generated readable presentation of test results by applying *html-testRunner*, which will be automatically sent to relevant developer's email.

SELECTED PROJECTS

A Shopping Website Based on Django

Aug. 2020 - Nov. 2020

Individual Project

- Implemented a high performance distributed file system by using **FastDFS**, increasing the scalability and gaining the ability to store massive data.
- Built a distributed system with **Celery** to increase the speed of fetching static pages. Improved the efficiency of obtaining pictures by applying **Nginx**.
- Established a search system by operating search engine **Whoosh** and framework **haystack**. Utilized **jieba** library to improved the performance of searches in Chinese.
- Applied **Pessimistic Concurrency Control** and **Optimistic Concurrency Control** to prevent errors in concurrent order processing.

SKILLS

Languages: Golang, Python, C, C++, SQL, HQL, Shell

Tools & Frameworks: Git, gRPC, Kafka, Redis, ClickHouse, MySql, Kubernetes, Navicat, Gin, KiteX