Yongzhao **Li**

Backend Engineer · Software Engineer

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Experience

Blockchain-based Federated Learning System

RWTH Aachen University

Software Engineer & Master Thesis — *Mar. 2022 - Exp. Sept. 2022*

- Built a blockchain platform with *hyperledge fabric framework* on which a Federated Learning system was deployed.
- The model aggregation in the Federated Learning system was refined and improved by overriding the network communication protocol with the *Hypercube P2P* topology network model.
- Created a trading system on the blockchain platform for models and data trading.
- Deployed on multiple servers with *Docker* and *Kubernetes*.

Blockchain Hackathon

Germany

Backend Engineer — *Nov. 2021*

- Built a blockchain platform according to *JD Chain* and integrated it with a simple machine learning platform.
- Created trading samples with the use of smart contracts to simulate models and data trading. Implemented smartcontracts for trading on the chain.
- A web application was developed with the facilitation from *go iris* in backend to provide an end-to-end experience for user to simulate trading.
- Review of Hackathon: AISpace.

Shanghai Nengjiao Network Technology Co., Ltd.

Remote Work, Part Time

Tech Lead & C++ Linux Server Engineer — *May. 2022 - Jul. 2022*

- Developed a linux server program with epoll model to connected multiple embedded devices, which is capable of accepting connction requests from devices, recieving heartbeat packets and requesting from the backend service.
- Designed a thread pool and a task queue that can forward packets for the targeting devices. The task queue is implemented by submitting tasks the thread pool. In addition, a message queue that implemented with C++ template was built as a critial section to guarantee thread synchronization.
- Implemented a connection pool that used for connecting and proxying access to the database, where the pool size can be dynamically adjusted in running time to wisely allocate the connection resources.
- Implemented a cache system to storage device status and keep persistence with *Redis*, with which developed a session login mechanism.

Tech Lead & Backend Engineer — *Mar. 2022 - Jun. 2022*

- Refactor the system with a microservices framework, *Tars* on which creating a C++ backend framework to fit, and wired them up by developing an Object Relational Mapping and adjusting the business code.
- Those two backend frameworks both include http context, dynamic router implemented with a trie tree, route group control, middleware design and error handling mechanism.
- Implemented a connection pool that used for connecting and proxying access to the database.
- Refactor business code to fit in the backend framework as well as *Spring Boot* in *Tars*.

Tech Lead & Backend Engineer — *Sep. 2021 - Feb. 2022*

- Implemented backend with python *Django* framework.
- Implemented a *Single Sign On* system with *JSON Web Token* on authentication and authorization for different applications on stateless login status.
- Tailor-made software development with *apinto*, a microservice gateway, and added a *JSON Web Token* authentication and authorization plugin in gateway.
- Implemented an asynchronous task with *Celery*.
- Deployed on a distributed system, multiple servers with *Docker*.

Tech Lead & Backend Engineer — *Mar. 2020 - Jun. 2020*

- Implemented backend with python *Django* framework and frontend with *vue*.
- Developed authentication and authorization with JSON Web Token by implementing a access token and a refresh token for stateless login status.

Tech Lead & Fullstack Engineer — *Nov. 2019 - Mar. 2020*

- Designed the whole architecture for the platform and built a machine learning and mapreduce platform for data prediction in different models.
- Implemented backend with *go iris* and frontend with *vue*.
- Implemented a machine learning platform for data preprocessing and data training with *sparkML* library, a mapreduce framework.
- Mainly deployed *Xgboost* model and *lightgbm* model for data regression analysis on the platform.
- Deployed on a distributed system, multiple servers with *Docker*.
- Main Page: Joinercast

Personal Blog & Main Page

Fullstack Engineer — *Sept. 2019 - Dec. 2019*

- Created a C++ backend framework to fit *Tars* and implemented frontend with *vue*.
- Implemented a connection pool for connecting and proxying access to the database.
- Deployed on a distributed system, multiple servers with *Docker*.
- Main Page: About me

Open Source Contribution

DCache

C++ Developer

- Dcache, a distributed NoSQL storage system based on Tars, both open source by Tencent.
- Repository: Tencent/DCache.
- Pull issues, fix issues and improve documetations.

Education

RWTH Aachen University — *Aachen, Germany*

M.S. in Computer Science — *Oct. 2018 - Exp. Oct.2022*

- Grade: 2.3/1.0

Guangdong University of Technology (GDUT) — *Guangdong, China*

B.S. in Computer Science — *Sept. 2014 - Jun. 2018*

- Grade: 2.2/1.0

Honors & Awards

Domestic

2021 **Best Technical Implementation and Industry Challenge,** Blockchain Hackathon — *Germany*

2016 **3rd Award,** Oracle Java Development Program Competition — *China*

Skills

Programming C++, Go, JAVA, Python, Javascript
Back-end Tars(Microservices), go iris, Spring Boot, Django, REST API
Front-end Vue, React, HTML5, CSS
Database MySQL, MongoDB, Redis, DCache
DevOps Docker, Kubernetes
Build Tools Makefile, CMake, QMake, Maven
Tools Linux maintenance, Git