

# Guosong Li

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Software Development Engineer

## SUMMARY

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- I consider myself to be keenly drawn to new technologies and innovations. I am incredibly passionate on learning about these and growing every day. I am a go-getter and have confidence that when presented with an opportunity or platform will perform to the best of my abilities and rise to the occasion.
- 5 years of backend-focused experience designing, scaling, and operating petabyte level database management systems in cloud.
- Experience with developing software to accomplish data movement and migration for data compliance
- Experience leading diverse 5-person team to finish complex software design and deliver product on time.
- Passionate about reliability engineering, cost-efficient architectures.

## WORK EXPERIENCE

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### AMAZON COM SERVICES LLC

Jun 2020 - Present

Software Development Engineer @ Transaction Data Storage

Seattle

- Develop and operate Amazon's internal NoSQL database for its ecommerce infrastructure.
  - Redesign and implement backup&recovery system utilizing native AWS services. Hardware cost is reduced by 50% and operational cost is reduced by 80%.
  - Lead design to fulfill customer request e.g. point-in-time-recovery utilizing AWS services.
  - Lead design of data deletion and compaction service for cost management. Operating cost is reduced by 30% max for single cluster.
  - Lead peak day operational campaign that serves **7MM tps** traffic for biggest NA cluster with **99.999% availability**.
- Design and develop **record-level regional-flexible SQL-compatible OLTP database system** with high consistency and availability at large scale
  - Improve consensus algorithm to cope with multi-record, multi-version transaction usecase
  - Design and develop core component of control plane e.g. centralized metadata service, capacity management service, workflow service and feedback control loop system
  - Design and develop region flexible feature that enables record-level data movement. This enables Amazon to move data in a seamlessly way to meet data compliance.
  - Design and develop backup and recovery system utilizing S3 network drive and garbage collecting learned data into blocked files. Compared with current database backup is at almost real time and recovery speed is reduced. by 90%.
  - Design and develop adapter system to migrate traffic from current to new database. Successfully onboarded and migrated **~5% traffic** to new databases.
- Develop global infrastructure management platform on top of AWS to host large-scale stateful services for ecommerce
  - Utilize EKS for auto scaling, failure mitigation etc. to separate software maintenance and infrastructure maintenance.
  - Utilize VPC to provide flat global network to support region flexible goal.
- Lead campaign and coordinate stakeholders for data movement campaign to new data centers to avoid energy shortage. Total 15TB data is moved **without degraded availability/consistency**.

## EDUCATION

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### University of California, San Diego

Aug 2018 - Feb 2020

Electrical Engineering Master Electrical and computer engineering

La Jolla, CA, U.S.

- GPA:3.71/4.0
- Relevant courses: motion planning and optimal control, robotics estimation, deep learning applications, statics learning, reinforcement learning.

### Wuhan University of Technology

Aug 2014 - May 2018

Mechanical Engineering Bachelor

Wuhan, Hubei, China

- In 2016 went to UC Davis for a one-year exchange program, during which joint FSAE team(main duty is vehicle dynamics and stability analysis)
- **Honors/Awards: Outstanding graduates(2018), Outstanding Extracurricular activities individual(2018)**