ZIDIAN LYU

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EDUCATION

University of California, Davis   Sep 2012 - Jun 2016

Bachelor of Science, **Computer Science**   Davis, CA

SKILLS

Language: Go, TypeScript, JavaScript, Python, Java

Front End: Angular 2+ (RxJS), ReactJS(Redux, JSX/TSX), React Native, AJAX

Server Framework: Go Fiber, NodeJS, Flask

Database: MongoDB, Firebase | GoogleSQL/Dremel SQL, PostgreSQL, mySQL | hive, spark, hadoop

ORM: SQLAlchemy, Bookshelf, Mongoose, PyMongo, GORM

Monitoring Tools: Grafana, Kibana

Performance Tools: Redis, Elastic Search, Kafka, RabbitMQ, Nginx

Web Technologies: gRPC, Thrift, SEO, Web Sockets, Load Balance, Docker, XSS, CSRF, SSL

Cloud Services: GCP (App Engine, Cloud Function, MemoryStore, Cloud Scheduler, Recommendation AI), AWS (Lambda Function, EC2, EKS, S3), ByteCloud (FaaS, TCE, TCC, BMQ)

EXPERIENCE

ByteDance & TikTok Inc.   Feb 2021 - Present

Engineering Lead   Mountain View, CA

The Co-founder and Engineering Lead of the **TikTok Data Comment** team. Managed the comment community atmosphere by: **control the content quality** + **improve the comment ranking**.

Achievement Overview
- Built and grew a team from a size of 2 to **12**.
- Reached out to **17** partner teams and established cooperation on **30+** projects.
- Owned and maintained the comment review pipelines for **13** international applications (i.e. TikTok with **600million DAU**, Helo with 5 million DAU, Resso with 15 million installed, etc.)
- Stayed 24/7 on-call for **30+** pipelines & core services.

People Experience
- Mentorship effort. Onboarded **10** new members in the team. Built up the engineering side documentations (**60+** docs) almost from scratch, topic covers: high-level overview, system introduction, engineering template, detailed operation tutorial etc. Established a **fully self-guidable** onboarding documentation for new members.
- Recruitment effort. Worked with **5 HRs**, reviewed **1200+ resumes**, Hosted **180+ interviews** in the past year, or equivalent to **350 hours** of hiring efforts. Offered examples / guidance to the HR team for candidate background & skills matching, which significantly improved the initial round passing rate from **33% to 49%**.

- Delegation effort. Setup Bi-Monthly OKRs for the engineering side of the team in the past year. Efforts include: drafted the **high-level engineering plans** according to the requirement pool, migration plans; discussed with each team member and assigned tasks to individuals based on their **interests and skill match**, helped them **grow** their skillset and find ideal projects. Hosted the weekly requirement review meeting and the bi-weekly comment engineering meeting. Setup the **meeting agenda**. Figured out the **actionable items** to the related participant. Setup **tasks reminder** and follow up the updates with the assignees.
- Negotiation skill. Stay strong on declining impractical projects. Terminated the bad-return project on behalf of the **cost & benefit analysis** on the milestone check (2 months migration bandwidth v.s. 30 mins of engineering effort per quarter). Led the communication effort for the project review and decline proposal, presented the blockers and returns.
- Management innovation. In order to help project POC set better expectations on project milestones and to give ENG a clearer order for the tasks to work on, I designed and built a **Priority & Progress Tracker** for managing all the real-time work-in-progress items for each ENG in the team. I invented a "**requirement PK**" concept in this method so that the PM could potentially "bid" their project priority if they experience any urgency; which helped the ENG team have a better idea on the specific TODO order.
- Build ENG standard. Hosted technical sharing seminars on best engineering practice on coding style & refactor with multiple teams. Had **40+ ENGs** (from various teams) to join the sharing session, host Q&A and discussion towards the topic. The doc and video were shared by **7 teams**.

Engineering Excellence
- Better design for the code structure. Led the team to develop and maintain the shared library project - "Pipeline Galaxy". Personal Contributed 13 modules.
- Improved the code quality. Led and did a large scope refactor and optimized on the codebase (**3000+** lines of code from the core services). This effort fixed lots of legacy code logic that frequently made mistakes, substantially increasing service stability. After the refactor, it maintains a **stable P999**. By redesigning and merging the code logic, deprecating about **1000+** lines of code, **saved 75%** repetitive & heavy cross-service calls. For the resource measurement, this factor optimized the **CPU usage** from **22% to 12%**, **Memory** from **8% to 4%**.
- Stay strict on the code review. Reviewed about **200 PRs** (across 10+ projects) in the past year, captured significant errors / typos on 10+ PRs, offered detailed revision feedback on logic design, readability, coding style etc.
- Closely Worked with **20+ PMs**, **10+ OPs** and **5+ MLEs** at a time. Stay responsive on the 24/7 on-call at both the US and CN timezone (including the holiday); Stand out and serve as the backup in-team for the on-duty POCs on their leave or absence.

Organization level awards
- **Best Engineer** in Nov-Dec/2021 Bi-month.
  - Measured by ENG excellence
- **Best People** in Jan-Feb/2022 Bi-month.
  - Measured by ENG impact + mentorship + team building + technical innovation

Google LLC. - Search

Software Engineer

Redwood City, CA

Tangi was acquired by Google Search. I helped migrate the users from Tangi to Wordpress web stories.

Tangi Infrastructure Maintenance

- Maintained the stability of the 5 core systems [search server | recommendation server | backlogging server | web UI | mobile UI] on a daily basis.

Web stories integration

- Implemented features to improve the user experience and UI stability on **Wordpress** console.

Google LLC. - Area 120 - Tangi

Feb 2020 - Oct 2020

Software Engineer

Redwood City, CA

Area 120 is a workshop for experimental products at Google which uses a lean-start-up approach of rapid iteration and user testing. Tangi is a new experimental short video platform with lifestyle videos that inspire you to try new things in under 60 seconds. **Project successfully graduated to Google Search in Oct 2020**. 🕯️🎉

Tangi Recommendation System

Role: *Project Lead & Main Contributor*
The recommendation system I designed and built recommends personalized video feeds for 13k users. We finished the recommendation system v1(Heuristic based) in March; enhanced and redesigned the recommendation v2(Deep Learning based) in October.

Impact

- Designed, implemented and productionaized the recommendation server V1 for Tangi web and mobile applications from scratch in 1 week.
- Make the recommendation system scalable and efficient to handle **500K MAU** with over **10k** videos for both web and native apps; be able to serve hundreds of high quality feeds for users within 2 seconds.
- Improved payload fetching performance from 20s to 2s and reduced the payload size from **1.5MB to 400KB** on average by pruning redundant queries and using **GZIP** compression.
- Implemented the pagination for the recommended video content, which reduced the response data size on the API transmission and largely improved the app loading speed.
- Applied parallel computation to improve data processing performance. Reduced both the interval video indexing time and the recommended posts querying time by **400%**.
- In the process of exploring a new design for recommendation V2 with [Recommendation AI](#), which is a new AI technology from Google Cloud.

Leadership

- Presented the recommendation system to Area 120 Principal and Staff engineers; collected feedback to further improve the pipeline.
- Gave a talk about Tangi Recommendation's design and implementation at Area 120 Tech Sharing Session.

Tangi Redis

Role: *Project Lead*
The Redis service I set up improves the performance of querying at the recommendation system and sets up the foundation for the memory cache for Tangi.

Impact
- Reduced the data fetching of the feed from **8s to 0.75s** on average (10.7 times faster)
- Reduced the data fetching time of comments from 500ms to 1ms on average (500 times faster)
- **Learning Required**: When we started this project, nobody at the team knew anything about Redis. I learned and built a functional prototype from scratch in 1 month.
- **End to end configuration**: Configured and maintained a Reids instance on Memorystore to cache videos and comments data, built an API to handle the cache jump start on Cloud Scheduler and implemented an independent Redis service that supports the cache data processing.
- **Integration Complexity**: Integrated the Redis server with the recommendation server and the mobile application; it allows the recommendation server fetch comments data from Redis cache instead of query from database, which made a huge performance improvement; on the client side, user's comment data will be cached to Redis.

Leadership
- **Independent Development:** Researched, proposed and implemented the Redis service end to end from scratch in 1 month.
- **Presentation**: Gave a talk about Tangi Redis design and implementation at Area 120 Show & Tell on July 22nd.

Google LLC. - Trust & Safety Engineering   Mar 2019 - Feb 2020

Web Solutions Engineer   Sunnyvale, CA

Develops platforms and systems that help protect the Google ads ecosystem, keeping ad traffic clean and removing bad actors from Google's ad network.

Python3 Migration
Role: *Project Lead*
Migrate the legacy Python code in AdSpam codebase.

Impact
- Migrated **100k+ lines** of Python 2 code (730+ building targets that affected AdSpam, PubQual and Sales teams, on the PY2AND3 compatible stage).
- Developed documentation and tracker for the team to understand the project scope and setup milestone on each migration stage. The documents explaining how to migrate and test the code saved the rest of the team at least 2-week research effort.
- Hosted a migration **2 week war-room** and led the team to finish the **97% migration** of the codebase.
- Shared migration experience across multiple engineering teams and helped our partners boost the productivity in their migration work (e.g. PubQual team, T&SE - Search team etc.)
- **Legacy Code**: This project involved migration and testing of **100,000+ lines** of 10-year-old legacy Python2 code, with extremely diverse and complicated business logic.
- **Communication Effort**: The Adspam codebase has 600+ build targets, 200+ blocking dependencies and countless projects that depend on our codebase; the migration process requires lots of communication and CL reviews from Dublin & Hyderabad AdSpam teams, which are in different time zones.
- **High Complexity**: Some libraries have more than **3000+ lines** of code. It required lots of time and effort to figure out the business logic, use cases, testing behaviors and change caveats.

Leadership
- Partnered with a teammate, tech led for a team of 5 SWEs (2 week war-room), dispatched migration work to individuals and provided guidelines for the team.
- The team accomplished **97%+** of PY2AND3 coverage in **5 business days**.
- The team converted 51 / 54 binary targets to PY3 by the end of the war-room.
- **Onboarded** 2 new SWEs for the AdSpam systems.

Dojo Platform
A platform allowing AdSpam analysts to record and manage ad traffic reviews.
- Optimized the workflow that analysts spend anywhere from minutes to multiple weeks in the spam investigations, each impacting thousands to potentially millions of dollars of revenue.
- Improved front end UI with stronger layout/style designs, clearer page transition interaction and more informative data validation instruction.
- Refactored the code base by abstracting and building shared UI components and stylesheets, which reduces the overall rendering complexity, cuts down lots of repetitive code and increases the scalability for the future components to add on.
- Fixed multiple **production-blocking bugs** under a tight timeline.

Web Properties Inspector
A system primarily used for inspecting and reviewing Adsense publishers.
- Initialized and developed the tool improvement and redesign plans for WPI (which was built in 2007, **12 years old**, with **530+ users**) and CBI (which was built in 2008, **11 years old,** with **370+ users**).
- Hosted client-side UX research over 500+ of users, analyzed survey response, new UI components design(sample design mock) and prototyped the design.
- Research and investigate into the user logs on the from the SpamOps QueryAid endpoint, write plx script to query and categorize the users into different groups for WPI and CBI. This research served as an important guide to get the user source about the tool usage and categorize the recipient groups for taking the tool survey.
- Tracked and measured user interaction by embedding Google Analytics and Tag Manager to the system. Added user event tracker through Tag Manager to record the real time web traffic.

Google LLC - Ads
Sales Support Tool Engineer

Apr 2018 - Mar 2019

Mountain View, CA

At Google Marketing Solution, built internal web tools and supports app development that provides sales solutions for thousands of sales representatives and Adwords advertisers worldwide.

Direct Calendar
A calendar for sales representatives to schedule treatment discussion.
- Helps 50k+ advertisers to schedule meetings with sales representatives based on treatment, language, timezone and market.
- Partnered with a Salesforce vendor to work on appointment data communication through SFDC API, built server handlers to fetch calendar available slots from SFDC and to send confirmation between sales representatives and Salesforce.
- Designed and built a shared library for both Autopilot and Direct Calendar applications.

Glassbox Autopilot
Project OneClick redesign, treatments scheduler.
- Scaled up and divided the implementation works for SMBs, and helps 1700+ account strategists to focus more on results and growth with Google.

- Refactored the OneClick project to version 2 based on the Angular framework with material design to improve the performance stability and user experience, project extendibility and to align with the technical stack of the team.

Apollo Deliver - Eligibility Calculator
A campaign eligibility calculator, for evaluating the Ads representatives performance and points.
- Proposed and researched the plan of data server performance, which took 10+ seconds to load.
- Built a test plan to show the loading performance of each Dremel SQL query that triggered during the search.
- Implemented an extra Dremel client to enable multi-threading on the data server which improved the entire querying speed by **25%**.

Glassbox Apollo Deliver
Bug triaging service, address sales representatives bug requests and handle appeal cases.
- Created a bug triaging document to manage and classify the issues types, reduced the bug solving time to less than a day on average and dropped the bug amount received by 50% compared to previous quarters.

Bitglass INC.
Jun 2017 - Jan 2018

Software Engineer
Campbell, CA

Bitglass, the total data protection company, is a global cloud access security broker (CASB) and agentless mobile security company based in Silicon Valley.
- Maintained customer-facing product on Python Django based framework with solutions on user based portal includes system performance, admin console logs and user license verification under Linux environment operations.
- Resolved bugs and implemented new features crossing UI/UX design, Trial/Product line customized configuration, ORM migrations between Django and MySQL and Regex pattern match scanning through cloud sharing files.
- Developed and configured branches on Jenkins automation tool for testing and story demo, built codes with fully covered unit tests and proceeded commits under meticulous code review and tight timelines.

Community Contribution

TypeScript Readability Review
Code Reviewer
- From 2019-08-16 to 2020-02-02, I have performed **111** CL reviews on behalf of the program. The median graduate from TypeScript readability completes the program in about 22 CLs, so my contribution can be viewed as providing mentoring to **5 candidates** start-to-finish.
- From 2019-02-06 to 2019-08-16, I have performed **201** CL reviews on behalf of the program. For comparison: the median graduate from TypeScript readability completes the program in about 20 CLs, so my contribution can be viewed as providing mentoring to **10 candidates start-to-finish**.

Leadership in G2G Teaching
Lead Instructor
- Angular/TypeScript 101, Aug 9, 2019 (60 attendees)
- Angular/TypeScript 201, Jun 6, 2019 (45 attendees)
- Angular/TypeScript 101, Feb 22, 2019 (33 attendees)