

Yumin Xia

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EDUCATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES | MASTER IN COMPUTER SCIENCE

Sept. 2016 - Dec. 2017 | LA U.S. • GPA: 3.97 / 4.00

XI'AN JIAOTONG UNIVERSITY | B.ENG IN COMPUTER SCIENCE AND TECHNOLOGY

Sept. 2012 - Jun. 2016 | Xi'an, China • Major GPA: 88 / 100

INDUSTRIAL EXPERIENCE

BAREFOOT NETWORKS (ACQUIRED BY INTEL), COMPILER TEAM | STAFF ENGINEER

Nov. 2017 - Jun. 2018; Feb. 2020 - present | Santa Clara, California, USA

- Designed the Packet Header Vector (PHV) allocation algorithm of Intel's P4 compiler for Tofino™ series (the fastest P4-programmable switch chips).
- Built an action constraints solver that is several orders of magnitude faster than directly modeling the problem in Z3.

LINO NETWORK (ACQUIRED BY TRON), BLOCKCHAIN TEAM | SOFTWARE ENGINEER, TECH LEAD.

Jun. 2018 - Feb. 2020 | Cupertino, California, USA

- The core developer of Lino Blockchain: (1) author of the sybil-proof reputation algorithm. (2) architectural level design: move-based bank API, event manager, etc. (3) implementation of modules: price feeding, donation, developer/IDA, etc.
- Fullstack developer of DLive.tv (Top#1 DApp by dapp.com in 2019). Backend: a payment queue service that executes blockchain-related transactions. It can merge similar transactions and ensures that one transaction will be delivered only once, and all failures are recorded (2-PC). Frontend: livestream player, misc components.
- Developer of the live-stream solution of DLive.tv. Design and implementation of RTMP server optimization, transcoding scheduler, and low-latency HLS solution(HTTP chunked transfer).
- Open source project Needle: it generates idiomatic Go codes of a multi-level-cached data access layer built on MySQL, Redis and memory cache. It does syntax and type checks on MySQL statements and generated codes are all type-safe. In production, it handles 100K+ QPS easily, with only several lines of configuration of SQL statements and cache policy.
- Contribution to upstream open source project: (1) Tendermint(the most popular PBFT-like consensus engine): fix memory leak bugs, and add RocksDB support. (2) DPlayer: misc bug fixes. (3) RocksDB Golang wrapper: bug fixes.

GOOGLE, DISPLAY & VIDEO ADS TEAM | SOFTWARE ENGINEER INTERN

Jun. 2017 - Sept. 2017 | MTV, California, USA

- A screen-diff test tool: when a rendering-server-related code change is submitted for code review, this tool will be triggered automatically, to build and run two different version of rendering server, replay traffic, render the returned result HTML content into images, and compare the rendered image. Unexpected differences will be captured and screen-diff image, along with html differences, will be reported to the submitter.
- A protobuf search tool: For a given query (SQL-like syntax on protobuf fields), returns a set of matched protobufs. This tool extracts 2.4M protobufs out from 60GB binary logs hourly, indexes specified fields, and save them to Bigtable. It can return a result set in less than one second, out from 60M protobufs. The query syntax support exact or fuzzy match, on all types of protobuf fields (e.g. int, string, enum, and nested fields..), and it supports the 'has-a' query on 'repeated fields' (array), which can be combined with both fuzzy/exact match.

CHONGQING PERK CULTURE COMMUNICATION CO., LTD | Co-FOUNDER, CTO

FULL STACK WEB DEVELOPER

Jan. 2013 - Aug. 2016 | Chongqing, China

Designed and developed a web application (called 'Flip') to support PerkSummit®, one of the most influential student conferences in southwestern China. This system includes student application management system, class enrollment, payment interface, a game-like badge system, and an internal social network. It is used by thousands of students and the admission committee of PerkSummit®. Server-side: PHP, CodeIgniter. Client-side: Bootstrap, jQuery; Database: MySQL.

ACADEMIC EXPERIENCE

RESEARCH IN NAMED-DATA NETWORKING (NDN)

SYSTEM SOFTWARE DEVELOPMENT IN MODERN C++

Aug. 2015 - Oct. 2017 | Internet Research Lab, UCLA

- Domain Name Service for Named Data Networking (NDNS). Design and implementation of: the NDNS security schema, denial of existence, cache resolver, validator, and a certificate fetcher for NDNS. Publication at ICCCN: NDNS. Source code: [gerrit](#)
- Implementation and evaluation of several NDN cache policies based on NDNSim: [github repo](#).

THE ACM/ICPC INTERNATIONAL COLLEGIATE PROGRAMMING CONTEST

CAPTAIN OF TEAM 'STRCPY', ASSISTANT COACH OF XJTU

Sept. 2012 – Sept. 2015 | Xi'an, China

- Silver Medal of The ACM-ICPC Asia Regional Guangzhou Site 2014
- Gold Medal and Fifth Place of The ACM-ICPC Multi-Provincial Programming Contest Chengdu Site 2013
- Gold Medal and First Place of The ACM-ICPC Shaanxi Provincial Programming Contest 2013
- Web-Based ACM Training System of XJTU, abilities includes remote code submitting and judging, code management among ACM competitors in XJTU, and training plan management.

SELECTED PROJECTS

SOFTWARE FORMAL VERIFICATION AND VISUALIZATION

- TrustCoq: Using machine-checked formal verification technique(Coq) to proof termination on a domain-specific language. The language describes the security schema of NDN applications. Specifically, this project formally proofed that, as long as a policy, described in this language, can pass the termination check, it will terminate in a finite number of steps.
- DUCK: A dynamic universal software system visualization kit. It can run a syntactical analysis on source code to produce interactive figures to help programmer understand the software structure. Figures can be dynamically configured, which addresses the scalability issue of visualization by letting user specify the what they want to focus. Currently, only C++ is supported, using libclang.