Xiangfeng Zhu

EXPERIENCE

650-660-0918 Contact xzhu27.me

Information zxfeng@umich.edu www.linkedin.com/in/xzhu

Research Cloud Computing, Distributed Systems, Systems for ML/Big Data, Federated Computating, Interests Edge Computing

EDUCATION University of Michigan, Ann Arbor Expected: May 2021

B.S., Computer Science(with honors)

Thesis: Real-time systems for complex vision and language applications

Advisor: Prof. Mosharaf Chowdhury

University of California, Santa Cruz

Transferred

Mar. 2018 - Sep. 2019

B.S., Computer Science

Research Assistant Dec. 2018 - Now Research

Symbiotic Lab, University of Michigan

Advisor: Prof. Mosharaf Chowdhury

Fast Distributed Computation Over Slow Networks

• Co-Developed a general-purpose execution engine, Sol, that can adapt to diverse network conditions on top of Apache Spark.

• Improved SQL, machine learning, and streaming jobs by $4.2\times$ and $16.4\times$ on average, respectively, in offline and online settings compared to the state-of-theart systems in resource-constrained networks.

Participant Selection for Federated Learning

- Co-Developed a participant framework to tackle data and device heterogeneity in Federated Learning using importance sampling
- Improved time-to-accuracy performance by $1.2 \times -14.1 \times$ and final model accuracy by 1.3%-9.8% compared to state-of-the-art FL framework

System for complex vision and language applications

- Collaborating with Prof. Junchen Jiang at University of Chicago
- Designing a system for real-time, complex computer vision and natural language processing applications for visually impaired users

Undergraduate Researcher Disorderly Lab, UC Santa Cruz

Advisor: Prof. Peter Alvaro

Protocol Repair Using Lineage Graphs

- Co-Designed a debugging approach for distributed systems based on analysis of data provenance obtained during system executions
- Co-Developed a standalone prototype Debugger Nemo and Evaluated it on the TaxDC collection of real-world bugs from large-scale distributed systems (e.g., Hadoop and HBase)

Undergraduate Researcher

Mar. 2017 - Aug. 2017

Storage System Research Center, UC Santa Cruz

Worked under: Prof. Darrell D. E. Long and Prof. Ethan L. Miller

Rogue Cell tower(IMSI Catcher) detector

- Wrote a design document with three lab partners detailing the project and future work
- Co-Designed an algorithm to pinpoint the location of IMSI Catchers based on received signal strength (RSS) and signal spike

PUBLICATIONS

- Fan Lai, Xiangfeng Zhu, Harsha Madhyastha, Mosharaf Chowdhury, "Oort: Informed Participant Selection for Scalable Federated Learning", arXiv:2010.06081, Submitted to NSDI' 21
- Fan Lai, Jie You, Xiangfeng Zhu, Harsha Madhyastha, Mosharaf Chowdhury, "Sol: Fast Distributed Computation Over Slow Networks", Proceedings of the 17th USENIX Symposium on Networked Systems Design and Implementation (NSDI 2020), Santa Clara, CA, 2020 (Acceptance Rate: 18.36%)
- Lennart Oldenburg, Xiangfeng Zhu, Kamala Ramasubramanian, Peter Alvaro, "Fixed It For You: Protocol Repair Using Lineage Graphs", Proceedings of the 9th biennial Conference on Innovative Data Systems Research (CIDR 19), Asilomar, CA, 2019

Work Experience

Databricks

May 2020 - Aug. 2020

Software Engineer Intern, Serverless Team

- Developed an efficient recycling mechanism for Spark clusters
- Designed and implemented a framework for zero downtime Spark cluster upgrade based on rolling updates and cluster pools

Dropbox

May 2019 - Aug. 2019

Software Engineer Intern , Filesystem Team

- Worked on the next-generation distributed filesystem for Dropbox
- Designed and implemented an asynchronous system to unmount namespaces that a user loses access to
- \bullet Redesigned our Mapreduce framework to be more efficient and fault-tolerant using RocksDB and gRPC

OTHER EXPERIENCE

- \bullet CMPE107: Probability and Statistics , UC Santa Cruz , Grader Spring 2018
- CMPS12B: Introduction to Data Structures, UC Santa Cruz , Learning Assistant Spring 2018, Winter 2018
- CMPS101: Algorithms and Abstract Data Types, UC Santa Cruz , Learning Assistant Fall 2017, Winter 2018

Awards

- OSDI Conference Student Grant, 2020
- Dean's Honor List: Fall 2016, Winter 2017, Spring 2017, Winter 2018, Spring 2018

SKILLS

- Programming: Java, C, C++, Python, Bash, SQL, HTML, CSS, LATEX
- Platform: Mac OS, Windows, Linux
- Tools: Perf, GDB, Valgrind, Make, Git, Vim, Docker

Miscellaneous

• Personal Blog: xzhu0027.gitbook.io/blog/