

Xiangfeng Zhu

CONTACT INFORMATION	3510 Murdoch Dr. Palo Alto, CA 94306 xzhu27.me	650-660-0918 zxfeng@umich.edu www.linkedin.com/in/xzhu
RESEARCH INTERESTS	Networking, Cloud Computing, Distributed Systems, Operating Systems, Systems for ML, Federated Learning	
EDUCATION	University of Michigan, Ann Arbor B.S., Computer Science <ul style="list-style-type: none">GPA: 3.82/4.00 Univeristy of California, Santa Cruz B.S., Computer Science <ul style="list-style-type: none">GPA: 3.94/4.00	Expected: Dec 2020 Sep. 2016 - June. 2018
RESEARCH EXPERIENCE	Research Assistant Software System Lab, University of Michigan Advisor: Prof. Mosharaf Chowdhury <i>Sol: Fast Distributed Computation Over Slow Networks</i> <ul style="list-style-type: none">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 and 16.4 on average, respectively, in offline and online settings compared to Apache Spark in resource-constrained networks. <i>Data Management for Federated Learning</i> <ul style="list-style-type: none">Developing a data/device management framework for client selection to tackle data/device heterogeneity in Federated Learning Undergraduate Researcher Disorderly Lab, UC Santa Cruz Advisor: Prof. Peter Alvaro <i>Nemo: Protocol Repair Using Lineage Graphs</i> <ul style="list-style-type: none">Designed a debugging approach for distributed systems based on analysis of provenance data obtained during system executionsCo-developed a standalone prototype Debugger Nemo and Evaluated our approach on the TaxDC collection of real-world bugs from large-scale distributed systems. Our experimental result shows that Nemo demonstrates the promise of automatic provenance-guided debugging for complex distributed protocols. <i>Box of Pain</i> <ul style="list-style-type: none">Designing a tracer and a fault injector using system-level provenance for unmodified distributed systemsEvaluating our approach on real-world distributed systems(e.g. Redis and Apache Bookkeeper) Undergraduate Researcher Computer Communication Research Group, UC Santa Cruz Advisor: Prof. J.J. Garcia-Luna-Aceves	Dec. 2018 - Now Mar. 2018 - Now Aug. 2017 - Feb. 2018

CUP: Channel-Utilization Persistence for MAC protocols

- Helped Professor J.J. design the first transmission strategy(CUP) for contention-based MAC protocols which applies to any MAC protocols with carrier sensing, virtual carrier sensing, or priority acknowledgments.
- Analyzed the efficiency of Channel-Utilization Persistence MAC protocols, such as CUP-CSMA and CUP-CSMA/CA, using Markov Chains.
- Presented numerical results that compare the throughput of CUP-CSMA, non-persistent CSMA, and 1-persistent CSMA.

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. Our approach includes Neighboring Cell Tower Information, Absence of Encryption and Signal Strength.
- Designed an algorithm to pinpoint the location of IMSI Catchers based on received signal strength (RSS)
- Wrote C code to communicate with a SIMCOM module via AT commands and a GPS module

WORK
EXPERIENCE

Incoming Software Engineer Intern, Databricks

May 2020 - Aug. 2020

- Will be working in Databricks as a Software Engineer Intern

Software Engineer Intern, Dropbox

May 2019 - Aug. 2019

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

Software Engineer Intern, Hainan Airline

Jun. 2018 - Aug. 2018

- Worked on Airline Map team to create a new navigation app for pilots
- Implemented newly-designed pages and built interactive navigation with HTML, CSS, XML, and OpenLayers3

PROJECTS

Distributed Debugger Using Provenance Graph

2018

- Implemented a lineage-driven distributed debugger that can analyze the given program and give suggestions to the programmer how and where to correct the program

Fault-tolerant Scalable Key-Value Store

2018

- Built a distributed, fault-tolerant, highly available and eventually consistent key-value store that can store the amount of data that cannot fit into one single machine.

Chess Puzzle Solver

2017

- Wrote a program that can determine if a player can force checkmate in up to 5 steps, including the moves of the opponent.

Online Reservation system

2017

- Designed an online reservation app for Manyue Yoga Stadium, on-line payment system, and on-line community for member to share their experience.

PUBLICATIONS

1. Fan Lai, Jie You, **Xiangfeng Zhu**, Mosharaf Chowdhury, Harsha Madhyastha, "Sol: Fast Distributed Computation Over Slow Networks", *under review*
2. 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

OTHER EXPERIENCE

- **CMPE107: Probability and Statistics** , UC Santa Cruz , Grader Spring 2018
- **CMPS12B: Introduction to Data Structures**, UC Santa Cruz , Tutor Spring 2018
- **CMPS12B: Introduction to Data Structures**, UC Santa Cruz , Lab Tutor Winter 2018
- **CMPS101: Algorithms and Abstract Data Types**, UC Santa Cruz , Tutor Fall 2017
- **CMPS101: Algorithms and Abstract Data Types**, UC Santa Cruz , Grader Fall 2017

AWARDS

- **Dean's Honor List:** Fall 2016, Winter 2017, Spring 2017, Winter 2018, Spring 2018

SKILLS

- **Language:** English, Chinese
- **Programming:** Java, C, C++, Python, Go, Scala, Bash, SQL, HiveQL, HTML, CSS, L^AT_EX, JavaScript(Limited)
- **Platform:** Mac OS, Windows, Linux
- **Tools:** Perf, GDB, Valgrind, Make, Git, Vim, Neo4j, Docker
- **Data:** Oracle, MySQL, Hadoop, Hive, Spark, Flink, ZooKeeper

REFERENCES

Dr. J.J. Garcia-Luna-Aceves University of California, Santa Cruz
Distinguished Professor of Computer Science and Engineering
Jack Baskin Endowed Chair of Computer Engineering
Phone: 831-459-4153 E-mail: jj@soe.ucsc.edu

Dr. Peter Alvaro University of California, Santa Cruz
Assistant Professor of Computer Science and Engineering
Phone: 415-813-9364 E-mail: palvaro@ucsc.edu

Chris Parsa University of California, Santa Cruz
Adjunct lecturer of of Computer Science and Engineering
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