Xiangfeng Zhu

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Research Interests: Networking, Cloud Computing, Distributed Systems

Education

University of Michigan, Ann Arbor — Sep. 2018 - now

B.S., Computer Science

- GPA: -/4.00

Univeristy of California, Santa Cruz — Sep. 2016 - June. 2015

B.S., Computer Science

- GPA: 3.94/4.00

Research Experience

Undergraduate Researcher — Mar. 2017 - Aug. 2017
Storage System Research Center, UCSC
Advisor: Prof. Darrell D. E. Long

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

Undergraduate Researcher — Aug. 2017 - Feb. 2018
Computer Communication Research Group, UCSC
Advisor: Prof. J.J. Garcia-Luna-Aceves

CUP: Channel-Utilization Persistence for MAC protocols

- Helped Professor J.J. design the first transmission strategy(CUP) for contention-based MAC protocols. This approach 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. 2018 - Now
Disorderly Lab, UCSC
Advisor: Prof. Peter Alvaro

Protocol Repair Using Lineage Graphs

- Developed a debugging approach based on analysis of provenance data obtained during system executions equipped with correctness specifications. Our approaches require programs and their correctness properties written in a high-level declarative language.

- Helped Design a standalone prototype Debugger Nemo and validated Nemo on protocols from real-world distributed bugs. Our experimental result shows that Nemo demonstrates the promise of automatic provenance-guided debugging for complex distributed protocols.

Projects

Fault-tolerant Scalable Key-Value Store 2017

- Developed a distributed, fault-tolerant key-value store that can store the amount of data that cannot fit into one single machine, using consistent hashing.

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.

Teaching Experience

- **CMPS101: Algorithms and Abstract Data Types**, UCSC, Tutor Fall 2017
- **CMPS12B: Introduction to Data Structures**, UCSC, Lab Tutor Winter 2018
- **CMPS12B: Introduction to Data Structures**, UCSC, Tutor Spring 2018

Other Experience

- **CMPS101: Algorithms and Abstract Data Types**, UCSC, Grader Fall 2017
- **CMPE107: Probability and Statistics** , UCSC, Grader Spring 2018

Awards

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

Skills

Programming: C, C++, Shell Scripting, Python, Java, Matlab, Bash
Tools: Git, LaTeX, Vim, Neo4j, Docker

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