Sajjad Rahnama

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Education

Ph.D. in Computer Science, University of California, Davis, CA, USA **Sep 2018 – June 2022**

- **GPA: 3.97**
- **Advisor:** Prof, Mohammad Sadoghi(msadoghi@ucdavis.edu)
- **Research Focus**: Databases, Distributed Fault Tolerant Protocols, BFT Consensus Algorithms, Secure Transaction Processing

Bachelor of Science in Computer Engineering, Tehran Polytechnique, Tehran, Iran **Sep 2013 – Apr 2018**

- **GPA: 3.6**
- **Related Courses:**
  - Principles of Database Design
  - Foundations of Matrix and Linear Algebra
  - Design of Algorithms
  - Data Structures and Algorithms
  - Data Storage and Information Retrieval
  - Artificial Intelligence

Selected Publications and Talks

- Dissecting BFT Consensus: In Trusted Components we Trust! **(*EuroSys 2023*)**
- Reliable Transactions in Serverless-Edge Architecture **(ICD 2023)**
- Practical View-Change-Less Protocol through Rapid View Synchronization (Under Submission)
- Power-of-Collaboration: A Sustainable Resilient Ledger Built Democratically ***(IEEE Data Engineering Bulletin 2022)***
- RingBFT: Resilient Consensus over Sharded Ring Topology **(EDBT2022) (Talk Link)**
- Proof-of-Execution: Reaching Consensus through Fault-Tolerant Speculation. International Conference on Extending Database Technology **(EDBT 2021)**
- ResilientDB: Global Scale Resilient Blockchain Fabric, Proceedings of the VLDB Endowment (**VLDB 2020**)
- Scalable, Resilient and Configurable Permissioned Blockchain Fabric. Proceedings of the VLDB Endowment (**VLDB 2020**)
- Permissioned Blockchain Through the Looking Glass: Architectural and Implementation Lessons Learned, 2020 International Conference on Distributed Computing Systems (**ICDCS 2020**)

Awards and Activities

- ★ **Best Teaching Assistant Award 2021 UC Davis** (ECS 265, ECS 165) [link]
- External Reviewer for conferences listed below:
  - *VLDB 2021*
  - *SIGMOD 2019, 2021*
  - *ICDCS 2020*
  - *ICDE 2020, 2021*
  - *CIKM 2021*

Research and Projects

- **ResilientDB, A Permissioned Blockchain Fabric** **Jan 2019 - Present**
  - **Role:** Design, Architect, and Implementation
  - High-throughput Yielding Distributed ledger built upon scale-centric design principles to democratize and decentralize computation written in **C/C++**. [**website**][**source code**]
  - **Design and Architect:** re-architected and re-imagined modular system design from scratch that embeds parallelism and deep pipelining at every layer to fully exploit modern hardware and cloud infrastructure globally
  - **Core BFT Protocols:** Implemented modern BFT protocols such as Zyzzyva, PBFT, Hotstuff, GeoBFT, RingBFT

- **Web Dashboard:** Admin dashboard for fabric using **React/Node JS/Nginx/Influx**

- **FoundationDB A Distributed Unbundled Transactional Key Value Store** **June 2021 – September 2021**
  - Building a distributed fault-tolerant key-value store
  - Working on randomized deterministic testing framework
- **L-Store: A Real-time OLTP and OLAP System** **Feb 2020**
  - **Role:** Design and Implementation
  - lineage-based storage architecture, a contention-free update mechanism over a columnar storage
  - Implementing L-Store in Python from the scratch as TA for Database Design Course at UC Davis

Professional Experience

Senior Member of Technical Staff at Oracle, Redwood Shores, California **October 2022 – Present**

- **Oracle Database:** working on high availability using sharding and replication with high throughput and low latency.
- **Design and develop** distributed consensus protocols for replication and fault tolerance of oracle database.

Research Internship at Microsoft Research, Redmond, Washington **June 2022 – September 2022**

- **Faster:** A fast concurrent persistent key-value store and log, in C# and C++ (aka.ms/FASTER)
- Working under supervision of **Badrish Chandramouli** on Faster and transactional capabilities of it.

Software Engineer Internship at Apple, Cupertino, California **June 2021 – September 2021**

- **FoundationDB Group:** Working on distributed database and randomized correctness testing framework
- Improving deterministic testing framework exploration using multiple configuration, buggification, fault injection, etc.

Research Engineer Internship at Moka Blox, Davis, California **June 2020 – September 2020**

- Building scalable, high-performance, and low latency Byzantine Fault tolerant protocols

Teaching Experience

Teaching Assistant at University of California Davis, CA

- ECS 265: Distributed Database Systems [Fall 2019, Fall 2020, Fall 2021] [website]
- ECS 165: Database Systems [winter 2019, winter 2020] [website]

Teaching Assistant at Tehran Polytechnique, Tehran

- Principles of Programming [Fall 2014]
- Discrete Structures [Spring 2015] [By Mehran S. Fallah]

Skills

Technical Skills: Distributed Databases – Multi threaded C++ system programming – Consensus Protocols – Fault Tolerance
Programming: C/C++ – Python – Java – JavaScript – Bash – PHP – Golang
Services and Systems: Google Cloud Platform - AWS - Docker- SQL - Linux and Bash - Git - LaTeX

References

Prof. Mohammad Sadoghi:

- **Affiliation:** Assistant Professor in the Computer Science Department at the University of California, Davis
- **Email:** msadoghi@ucdavis.edu
- **Website:** expolab.org

Dr. Mark Dilman:

- **Affiliation:** Senior Director of High Available Databases at Oracle
- **Email:** mark.dilman@oracle.com
- **LinkedIn:** Mark Dilman