Sujaya Maiyya

 +1-805-837-9626　　●　　✉ smaiyya@uwaterloo.ca
🌐 https://cs.uwaterloo.ca/ smaiyya/

My interdisciplinary research spans distributed systems, databases, and data security. **I design, prototype, and evaluate protocols for managing geo-distributed data in a performance efficient and secure manner**. My research focuses on integrating cryptographic techniques with databases to mitigate data integrity and data privacy vulnerabilities in traditional database systems. The increasing popularity of blockchains and the use of third-party cloud – scenarios in which the servers storing and processing the data are not trusted – makes my research highly relevant to today's problems.

Work

University of Waterloo　　**Waterloo, Canada**
Assistant Professor　　*September 2022 - Present*

Education

PhD in Computer Science　　**Santa Barbara, USA**
UC Santa Barbara　　*January 2018 - June 2022*

MSc in Computer Science　　**Santa Barbara, USA**
UC Santa Barbara　　*Sept 2016 - December 2017*

B.E. in Information Science　　**Bangalore, India**
P.E.S Institute of Technology　　*August 2010 - May 2014*

Awards and Accomplishments

- MIT **EECS Rising Stars** — *August 2021*
- **IBM PhD Fellowship 2020** award — *March 2020*
- **Google PhD Fellowship 2020** award (declined) — *April 2020*
- **Outstanding Graduate Student 2018-19** award in the UCSB CS dept. — *June 2019*
- Elected **Graduate Student Representative** (thrice) at UCSB — *2018 - 2020*
- **Spot Bonus** award for leadership qualities at Citrix — *May 2016*
- **SAP Labs Scholarship** (4 times) for highest CGPA in the dept. at PESIT — *2012-2014*
- **Second Prize** at **Intel CCF Innovation Contest** — *August 2013*
- **Summer Research Fellowship** from Human Resource Development Ministry — *March 2013*
- **Second Prize** at Ayana Hackathon — *May 2012*

Publications

1. **Sujaya Maiyya**, S. Vemula, D. Agrawal, F. Kerschbaum, and A. El Abbadi. Waffle: An Online Oblivious Datastore for Protecting Data Access Patterns. SIGMOD, 2024
2. **Sujaya Maiyya**, P. Ananth, D. Agrawal, and A. El Abbadi. ORTOA: One Round Trip Oblivious Access. In submission, 2023
3. MJ. Amiri, D. Shu, **Sujaya Maiyya**, D. Agrawal, and A. El Abbadi. Ziziphus: Scalable Data Management Across Byzantine Edge Servers. *IEEE ICDE*, 2023
4. **Sujaya Maiyya**, S. Ibrahim, C. Scarberry, D. Agrawal, A. El Abbadi, H. Lin, S. Tessaro, and V. Zakhary. Quoram: A quorum-replicated fault tolerant oram datastore. *USENIX Security*, 2022
5. **Sujaya Maiyya**, I. Ahmad, D. Agrawal, and A. El Abbadi. Samya: Geo-distributed data system for high contention data aggregates. *International Conference on Data Engineering (ICDE)*, 2021
6. F. Zhao, **Sujaya Maiyya**, R. Wiener, D. Agrawal, and A. El Abbadi. KII$^{\pm}$: Approximate quantile sketches over dynamic datasets. *Proceedings of the VLDB Endowment*, 2021
7. **Sujaya Maiyya**, DBH. Cho, D. Agrawal, and A. El Abbadi. Fides: Managing data on untrusted infrastructure.

International Conference on Distributed Computing Systems (ICDCS), 2020

8. MJ. Amiri, **Sujaya Maiyya**, D. Agrawal, and A. El Abbadi. Seemore: A fault-tolerant protocol for hybrid cloud environments. *International Conference on Data Engineering (ICDE)*, 2020

9. **Sujaya Maiyya**, F. Nawab, D. Agrawal, and A. El Abbadi. Unifying consensus and atomic commitment for effective cloud data management. *Proceedings of the VLDB Endowment*, 12(5):611–623, 2019

10. V. Zakhary, MJ Amiri, **Sujaya Maiyya**, D. Agrawal, and A. El Abbadi. Towards global asset management in blockchain systems. *BCDL co-located with VLDB (Workshop)*, 2019

11. **Sujaya Maiyya**, V. Zakhary, MJ. Amiri, D. Agrawal, and A. El Abbadi. Database and distributed computing foundations of blockchains. In *SIGMOD (Tutorial)*, 2019

12. **Sujaya Maiyya**, V. Zakhary, D. Agrawal, and A. El Abbadi. Database and distributed computing fundamentals for scalable, fault-tolerant, and consistent maintenance of blockchains. *Proceedings of the VLDB Endowment (Tutorial)*, 11(12):2098–2101, 2018

13. V. Arora, RKS. Babu, **Sujaya Maiyya**, D. Agrawal, A. El Abbadi, X. Xue, et al. Dynamic timestamp allocation for reducing transaction aborts. In *2018 IEEE 11th International Conference on Cloud Computing (CLOUD)*, pages 269–276. IEEE, 2018

Funding

- NSERC Discovery Grant — *2023-2027*
- Canada Foundation of Innovation JELF — *April 2023*
- Ontario Research Foundation SIF — *pending*

Research and Industrial Work Experience

Cornell University — **Ithaca, USA**
Postdoctoral Researcher — *July 2022 - August 2022*

IBM T.J. Watson Research Center — **Yorktown Heights, USA**
Research Intern — *June - Sept 2021*
- Interned at the Hybrid Cloud division on IBM Research, working on KAR runtime, a system similar in concept to a serverless platform.
- Added distributed transactional semantics within KAR to guarantee ACID properties. Implemented TPC-C benchmarking to evaluate the proposed transactional framework and to highlight the expansiveness of KAR.

Google — **Sunnyvale, USA**
Software Engineer Intern — *June - Sept 2018, June - Sept 2019*
- Interned twice with Quotaserver – a distributed bin counting - team. Identified the performance bottleneck of Quotaserver which was due to the backend database Spanner.
- Optimized the performance of Quotaserver by sharding a single key in Spanner across different cells. The optimization resulted in 2.3x performance gain and 51% reduction in latency of the system.

Google — **New York, USA**
Software Engineer Intern — *June 2017 - Sept 2017*
- Worked in Google Ads group to introduce a new type of scheduler for Ads report generation that produced timely reports for customers across the globe.
- The project went in production and impacted many ad publishers, redefining the existing client SLAs.

Citrix R&D — **Bangalore, India**
Software Developer — *Feb 2014 - July 2016*
- Worked with Cloud Orchestration team in developing various features for NetScaler Control Center (NCC).
- Successfully drove the project of adding a new feature in NCC which enabled major CloudStack tenants to use load-balancing features of NetScaler. Have committed fixes into OpenSource Apache CloudStack.
- Extended admin partition feature of NetScaler to various cloud users eliminating hardware constraints required for loadbalancing.

Teaching Experience

- CS348: **Introduction to Database Systems (160 students)** — *Spring 2023*

Professional Service

Chair:
- 2023: SoCC Publicity Chair

Reviewer:
- 2024: VLDB, ICDE Industry Track, COMAD
- 2023: ICDE, SIGMOD Demo Track
- 2022: SoCC
- Frequent Reviewer: TKDE, FGCS, and DKE Journals

Community Service

- Core member of **DB-DEI**: Database Diversity, Equity, and Inclusion initiative.
- **Volunteer Tutor** at Carizon for under-privileged students.
- **Volunteer Tutor** at School On Wheels for students experiencing homelessness.

Invited Talks, Tutorials, and Posters

- **University of Chicago** - *Fortifying Cloud Data Security: Achieving Fault Tolerance and High Performance in Oblivious Databases*   *November 2023*
- **Northwestern University** - *Fortifying Cloud Data Security: Achieving Fault Tolerance and High Performance in Oblivious Databases*   *November 2023*
- **University of Illinois Chicago** - *Fortifying Cloud Data Security: Achieving Fault Tolerance and High Performance in Oblivious Databases*   *November 2023*
- **University of Washington** - *A unified approach for fault-tolerant and secure management of data* *September 2023*
- **CS-CAN conference at McGill University** - *Ensuring data fault tolerance in oblivious datastores* *June 2023*
- **University of British Columbia** - *A unified approach for fault-tolerant and secure management of data* *May 2023*
- **Simon Fraser University** - *A unified approach for fault-tolerant and secure management of data* *April 2023*
- **Salesforce** - *Managing Data Fault-tolerantly in Trusted and Untrusted Infrastructures* *November 2021*
- **MIT EECS Rising Stars** Poster - *Managing Data in Trusted and Untrusted Infrastructures* *October 2021*
- **UC Berkeley** Talk - *Managing Data in Trusted and Untrusted Infrastructures*   *August 2021*
- **IBM Research** Talk - *Managing Data in Trusted and Untrusted Infrastructures*   *August 2021*
- **SBBD 2020** Tutorial - *Database and Distributed Computing Foundations of Blockchains*   *Sept 2020*
- **VLDB 2018** Tutorial - *Database and Distributed Computing Foundations of Blockchains*   *August 2018*