SOUJANYA PONNAPALLI

soujanya@berkeley.edu · soujanyaponnapalli.github.io · scholar profile

WORK & EDUCATION

University of California, Berkeley — **UC Berkeley**
Postdoc · Sky Computing Lab · EECS Department — 2023-Ongoing
Supervisors: Prof. Natacha Crooks and Prof. Matei Zaharia

University of Texas at Austin — **UT Austin**
PhD · Systems and Storage Lab · CS Department — 2017-23
Advisor: Prof. Vijay Chidambaram
Minimizing I/O Bottlenecks to Achieve Scalable and High-Throughput Systems

International Institute of Information Technology, Hyderabad — **IIIT-H**
Bachelor's with Honors · SERC Lab · CS and Engineering — 2013-17
Advisor: Prof. Suresh Purini

INTERESTS

Distributed systems · Storage systems · Operating systems · AI systems
I am a systems researcher. I build systems that are not just fast and scalable but also reliable, providing strong guarantees such as performance isolation and fault tolerance in practice.

PUBLICATIONS

†Lead postdoc *Project co-leads

1. **Metronome: I/O-Efficient Logging for State Machine Replication** **[VLDB'27]**
Harald Ng*, **Soujanya Ponnapalli***†, Kevin Harrison, Reginald Frank, Audrey Cheng, Natacha Crooks, and Paris Carbone
Under revision · Preprint

2. **Delta Fair Sharing: Performance Isolation for Multi-Tenant Storage Systems** **[VLDB'27]**
Tyler Griggs*, **Soujanya Ponnapalli***†, Dev Bali, Wenjie Ma, James DeLoye, Audrey Cheng, Jaewan Hong, Natacha Crooks, Scott Shenker, Ion Stoica, and Matei Zaharia
Under submission · Preprint

3. **Time is Here for Just-in-Time Systems: Challenges and Opportunities** **[MLForSys'26]**
Shu Liu, Alexander Krentsel, Shubham Agarwal, Mert Cemri, Ziming Mao, **Soujanya Ponnapalli**, Alexandros G. Dimakis, Sylvia Ratnasamy, Matei Zaharia, Aditya G. Parameswaran, and Ion Stoica
Under submission · Preprint

4. **Rollbaccine: Herd Immunity against Storage Rollback Attacks in TEEs** [SIGMOD'26]
David C. Y. Chu, Aditya Balasubramanian, Dee Bao, Natacha Crooks, Heidi Howard, Lucky Katahanas, and **Soujanya Ponnapalli**†

5. **SkyStore: Cost-Optimized Object Storage Across Regions and Clouds** [VLDB'25]
Shu Liu, Xiangxi Mo, Moshik Hershcovitch, Henric Zhang, Audrey Cheng, Guy Girmonsky, Gil Vernik, Michael Factor, Tiemo Bang, **Soujanya Ponnapalli**†, Natacha Crooks, Joseph E. Gonzalez, Danny Harnik, and Ion Stoica
[Best of VLDB'25 nomination]

6. **Real Life Is Uncertain. Consensus Should Be Too!** [HotOS'25]
Reginald Frank*, Octavio Lomeli, Neil Giridharan, **Soujanya Ponnapalli***†, Marcos K. Aguilera, and Natacha Crooks

PUBLICATIONS

7. **Lost in Translation: The Search for Meaning in Network-Attached AI Accelerator Disaggregation** [HotNets'25]
   Jaewan Hong, Yifan Qiao, **Soujanya Ponnapalli**, Shu Liu, Marcos K. Aguilera, Vincent Liu, Christopher J. Rossbach, and Ion Stoica
8. **Supporting Our AI Overlords: Redesigning Data Systems to be Agent-First** [SAA'25]
   Shu Liu, **Soujanya Ponnapalli**, Shreya Shankar, Sepanta Zeighami, Alan Zhu, Shubham Agarwal, Ruiqi Chen, Samion Suwito, Shuo Yuan, Ion Stoica, Matei Zaharia, Alvin Cheung, Natacha Crooks, Joseph E. Gonzalez, and Aditya G. Parameswaran
9. **DINOMO: An Elastic, Scalable, High-Performance Key-Value Store for Disaggregated Persistent Memory** [VLDB'22]
   Sekwon Lee, **Soujanya Ponnapalli**, Sharad Singhal, Marcos K. Aguilera, Kimberly Keeton, and Vijay Chidambaram
10. **RainBlock: Faster Transaction Processing in Public Blockchains** [ATC'21]
    Soujanya Ponnapalli, Aashaka Shah, Souvik Banerjee, Dahlia Malkhi, Amy Tai, Vijay Chidambaram, and Michael Wei
11. **WineFS: Hugepage-Aware File System for PM that Ages Gracefully** [SOSP'21]
    Rohan Kadekodi, Saurabh Kadekodi, **Soujanya Ponnapalli**, Harshad Shirwadkar, Gregory R. Ganger, Aasheesh Kolli, and Vijay Chidambaram
12. **Software-Defined Data Protection: Low Overhead Policy Compliance at the Storage Layer is Within Reach!** [VLDB'21]
    Zsolt István, **Soujanya Ponnapalli**, and Vijay Chidambaram
13. **Finding Crash-Consistency Bugs with Bounded Black-Box Crash Testing** [OSDI'18]
    Jayashree Mohan, Ashlie Martinez, **Soujanya Ponnapalli**, Pandian Raju, and Vijay Chidambaram
14. **mLSM: Making Authenticated Storage Faster in Ethereum** [HotStorage'18]
    Pandian Raju, **Soujanya Ponnapalli**, Evan Kaminsky, Gilad Oved, Zachary Keener, Vijay Chidambaram, and Ittai Abraham
15. **Holographic Storage for the Cloud: Advances and Challenges** [TOS'25]
    Nathanaël Cheriere, Jiaqi Chu, Grace Brennan, Pashmina Cameron, Pedro Da Costa, Jannes Gladrow, Guilherme Ilunga, Douglas Kelly, Sarah Lewis, Joowon Lim, Giorgio Maltese, Tony Mason, Greg O'Shea, **Soujanya Ponnapalli**, Michael Rudow, Alan Sanders, Theano Stavrinos, Xingbo Wu, Mengyang Yang, Dushyanth Narayanan, Benn Thomsen, and Antony Rowstron
16. **CrashMonkey and ACE: Systematically Testing File-System Crash Consistency** [TOS'19]
    Jayashree Mohan, Ashlie Martinez, **Soujanya Ponnapalli**, Pandian Raju, and Vijay Chidambaram

---

TECHNICAL REPORTS

†Lead postdoc

17. **Token Latency Fairness: Performance Isolation for Multi-Tenant LLM Serving** [arXiv'26]
    Dev Bali, **Soujanya Ponnapalli**†, Yichuan Wang, Natacha Crooks, Scott Shenker, and Matei Zaharia
18. **SKYE: Write-Optimized Key-Value Store with Fine-Grained Control over Persistent Memory Accesses** [arXiv'26]
    Soujanya Ponnapalli, Sekwon Lee, Rohan Kadekodi, and Vijay Chidambaram

---

ONGOING PROJECTS

†Lead postdoc *Project co-leads

Page Cache Fairness: Performance Isolation for Multiple Tenants in Operating Systems
Soujanya Ponnapalli†, Charisse Ivana Yeung, Natacha Crooks, and Matei Zaharia

Powder: Fine-Grained Fault-Tolerance for Distributed Storage Systems
Reginald Frank*, **Soujanya Ponnapalli***†, Neil Giridharan, Naama Ben-David, and Natacha Crooks

Fugue: Exploring Durability Trade-Offs in Replicated Storage
Diogo Antunes, Baltasar Dinis, **Soujanya Ponnapalli**, Vijay Chidambaram, Peter Druschel, and Rodrigo Rodrigues

PATENTS

Recoverable Processes [US Patent App. 17/981,296]
Jonathan D. Goldstein, Philip A. Bernstein, **Soujanya Ponnapalli**, Jose M. Faleiro, and Peter Charles Shrosbree

WORK EXPERIENCE

Microsoft Research, Redmond **Summer'22**
Mentor: Jonathan Goldstein

Microsoft Research, Redmond **Summer'20**
Mentor: Anirudh Badam

Microsoft Research, Cambridge **Summer'19**
Mentors: Dushyanth Narayanan and Antony Rowstron

VMware Research, California **Summer'18**
Mentors: Michael Wei and Dahlia Malkhi

TEACHING EXPERIENCE

Teaching Assistant at UT Austin **Fall'20,'23**
Virtualization with Prof. Vijay Chidambaram

Teaching Assistant at IIIT-H **2015-17**
Algorithms and Data Structures with Prof. Kishore Kothapalli
Operating Systems with Prof. Suresh Purini
Electrical Science with Prof. Rambabu Kalla

SERVICE

NSF Proposal Reviewer	2026
Program Committee	OSDI'26, NSDI'26, ATC'25, NSDI'25, EuroSys'25
External Program Committee	FAST'25, ATC'24, NSDI'19
Journal Reviewer, ACM TOCS	2024
Hallway Discussion Lead, SOSP	2021
Shadow PC, EuroSys	2020
Chair, Graduate Application Assistance Program (GAAP@UT)	2020-21

MENTORING

PhD students

Reginald Frank, Shu Liu, Tyler Griggs, Dev Bali, and Diogo Antunes	UC Berkeley
David C. Y. Chu and Jaewan Hong	UC Berkeley
Harald Ng	KTH Sweden

Masters students

James DeLoye, Extending Delayed Fair Sharing	UC Berkeley

Undergraduate students

Charisse Ivana Yeung	UC Berkeley
Souvik Banerjee, Implementing Stateless Clients in Ethereum	UT Austin
Gilad Oved, Evan Kaminsky, and Zachary Keener	UT Austin

LEADERSHIP

Organizer, Sky Systems Seminar, Sky Computing Lab, UC Berkeley	2024-25
Co-organizer, Databases Seminar, Sky Computing Lab, UC Berkeley	2024-25
Representative, Graduate Association of Computer Sciences (GRACS@UT)	2020-21
Mentor, Women in Computer Science (WiCS), UT Austin	2019-20
Co-organizer, Systems Seminar, Lab for Advanced Systems Research, UT Austin	2018

AWARDS & GRANTS

Summer Research Institute (SuRI) Fellowship, EPFL	2025
Berkeley RDI Frontier Research Funding	2024
The James C. Browne Graduate Fellowship	2017-18
IIIT-H Best All-Rounder Gold Medalist	2017
Dean's Award for ranking in the top 5% of students, IIIT-H	2014-17

REFERENCES

Natacha Crooks and Matei Zaharia (UC Berkeley), Vijay Chidambaram (UT Austin), Marcos K. Aguilera (NVIDIA), and Tianyin Xu (UIUC)