# SOUJANYA PONNAPALLI

soujanya@berkeley.edu
people.eecs.berkeley.edu/∼ soujanya
scholar.google.com/soujanya


## WORK & EDUCATION

**University of California, Berkeley** **Ongoing**
Postdoc | Sky Computing Lab | EECS Department
Advisor: Prof. Natacha Crooks

**University of Texas at Austin** **UT-Austin**
PhD | Systems and Storage Lab | CS Department 2017-2023
Advisor: Prof. Vijay Chidambaram
Minimizing I/O Bottlenecks to Achieve Scalable and High-Throughput Systems

**International Institute of Information Technology, Hyderabad** **IIIT-H**
Bachelors with Honors | SERC lab | CS and Engineering
Advisor: Prof. Suresh Purini
**Best all-rounder gold medal recipient**

## INTERESTS

Distributed systems; decentralized systems e.g., blockchains, authenticated data structures; storage systems e.g., key-value stores, file systems; systems for disaggregated memory or storage, and for modern hardware e.g., PM (Persistent Memory), CXL (Compute eXpress Link).

## PREVIOUS EXPERIENCE

**Microsoft Research, Redmond** **Summer '22**
Mentors: Jonathan Goldstein
Achieving scalable, high-throughput txs in distributed databases along with simple recovery

**Microsoft Research, Redmond** **Summer '20**
Mentors: Anirudh Badam
Caching multi-modal data with harvest VMs to accelerate large-scale applications at low cost

**Microsoft Research, Cambridge** **Summer '19**
Mentors: Dushyanth Narayanan and Antony Rowstron
Co-designing holographic cloud storage and its I/O stack to achieve high throughput

**VMware Research, California** **Summer'18**
Mentors: Michael Wei and Dahlia Malkhi
Scaling blockchain throughput via sharding and efficient witness verification

## RESEARCH PROJECTS

**Powder: Let systems choose their consensus needs** **Ongoing**
A consensus framework that allows applications to input their consensus needs, accounts for heterogeneous servers in datacenters and works with a refined model of realistic failures.

**Cascades: Scalable and high-throughput txs with simple recovery** **Ongoing**
Distributed database that achieves scalable and high-throughput txs without trading off the simplicity of recovering from failures; it shows improvements of up to two-orders in magnitude

**Skye: Crafting PM accesses for scalably saturating PM bandwidth** **Ongoing**
Monolithic key-value store that reclaims fine-grained control over all data accesses to utilize the low bandwidth of PM and CXL-attached storage devices; promises upto 2× performance.

## PUBLICATIONS

**DINOMO: Elastic, Scalable, High-Performance Key-Value Store for Dissagregated Persistent Memory,** Sekwon Lee, **Soujanya Ponnapalli**, Sharad Singhal, Marcos K. Aguilera, Kimberly Keeton, and Vijay Chidambaram. **[VLDB-22]**

**RainBlock: Faster Transaction Processing in Public Blockchains.**
**Soujanya Ponnapalli**, Aashaka Shah, Amy Tai, Souvik Banerjee, Vijay Chidambaram, Dahlia Malkhi, and Michael Wei. **[ATC-21]**

**WineFS: Hugepage-aware file system for PM that ages gracefully.** Rohan Kadekodi, Saurabh Kadekodi, **Soujanya Ponnapalli**, Harshad Shirwadkar, Gregory R. Ganger, Aasheesh Kolli, and Vijay Chidambaram. **[SOSP-21]**

**Software-defined data protection: Low overhead policy compliance at the storage layer is within reach!** Zsolt István, **Soujanya Ponnapalli**, and Vijay Chidambaram. **[VLDB-21]**

**Finding crash-consistency bugs with bounded black-box crash testing.** Jayashree Mohan, Ashlie Martinez, **Soujanya Ponnapalli**, Pandian Raju, and Vijay Chidambaram. **[OSDI-18]**

**mLSM: Making authenticated storage faster in ethereum.**
Pandian Raju, **Soujanya Ponnapalli**, Evan Kaminsky, Gilad Oved, Zachary Keener, Vijay Chidambaram, and Ittai Abraham. **[HotStorage-18]**

## SERVICE

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|---|---|
| **Technical Program Committee, NSDI** | **2025** |
| **Technical Program Committee, Eurosys** | **2025** |
| **External Review Committee, ATC** | **2024** |
| **Reviewer, ACM Journal, TOCS** | **2024** |
| **Hallway Discussion Lead for SOSP** | **2021** |
| **Chair for Graduate Application Assistance Program (GAAP@UT)** | **2020** |
| **Shadow PC for Eurosys** | **2020** |
| **External Reviewer for NSDI** | **2019** |

## ACADEMIC EXPERIENCE

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

**Research Assistant at UT-Austin** **2017-20,21-23**
Advisor: Prof. Vijay Chidambaram

**Research and Teaching Assistant at IIIT-H** **2015-2017**
Algorithms and Data Structures with Prof. Kishore Kothapalli
Operating Systems with Prof. Suresh Purini
Electrical Science with Prof. Rambabu Kalla

## TALKS

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| **Scaling Transaction Throughput in Public Blockchains** | **[SDN-22]** |
| **RainBlock: Faster Transaction Processing in Public Blockchains** | **[ATC-21, MSR]** |
| **Blockchains and their Scalability Limitations** | **[LASR, UT-Austin]** |
| **mLSM: Making Authenticated Storage Faster in Ethereum** | **[HotStorage-18, VRG]** |
| **Finding Crash Consistency Bugs with Bounded Black-Box Crash Testing** | **[VRG]** |

## POSTERS

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| **Eureka! We can let your systems decide their consensus needs** | **[OSDI-24]** |
| **Recovery can be simple! High-throughput txs for distributed databases** | **[SkyRetreat-24]** |
| **CrashML: Making Systematic Crash Testing of File Systems Feasible** | **[OSDI-18]** |
| **mLSM: Making Authenticated Storage Faster in Ethereum** | **[HotStorage-18]** |

## AWARDS

**The James C. Browne Graduate Fellowship** **2017-18**
Recipient of the James C. Browne Graduate Fellowship at UT Austin

**IIIT-H Best All-rounder** **2017**
Recipient of the IIIT-H gold medal as the best all-rounder of the batch UG2k13

**Dean's Award** for ranking in the top 5% of the students at IIIT-H

## TRAVEL GRANTS

**SOSP Travel Scholarship** **2019**
Recipient of ACM SOSP 2019 Scholarship

**USENIX Student Travel Grant** **2018**
Recipient of USENIX Travel grants to attend OSDI'18 and ATC'18

## EXTRA-CURRICULARS

**Databases seminar** | **Sky Computing Lab** | **Berkeley** **2024**
Co-organizer of Database systems seminar for Summer'24, Fall'24, Spring'25.

**Graduate Representative Association of Computer Sciences** | **UTCS** **2020-21**
Member of the GRACS committee.

**Systems seminar** | **Lab for Advanced Systems Research** | **Austin** **2018**
Co-organizer of LASR systems seminar for Fall 2018.

**Member of IIIT-H cultural council** **2013-2017**
Member of the Cultural Council for the batch of 2013.

**Sports Ccordinator and representative at IIIT-H** **2014-16**
Sports coordinator and representative of the Prithvi house of IIIT-H.

## REFERENCES

Available upon request