SOUJANYA PONNAPALLI

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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
Minimizing I/O Bottlenecks to Achieve Scalable and High-Throughput Systems
Advisor: Prof. Vijay Chidambaram

International Institute of Information Technology, Hyderabad **IIIT-H**
Bachelor of Technology with Honours in Computer Science and Engineering *2013-2017*
Advisor: Prof. Suresh Purini
Best all-rounder gold medal recipient

INTERESTS

Distributed transactions, public blockchains, and authenticated data structures.
Persistent Memory (PM), Compute eXpress Link (CXL), and disaggregated memory systems.
Key-value stores and file systems.

WORK EXPERIENCE

Microsoft Research, Redmond **Summer '22**
Mentors: Jonathan Goldstein and Phil Bernstein
Handling recovery to support scalable, high-throughput transactions in datacenters

Microsoft Research, Redmond **Summer '20**
Mentors: Anirudh Badam and Ranveer Chandra
Caching multi-modal data on Harvest VMs to accelerate large-scale applications

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

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

RESEARCH PROJECTS

Cascades: Scaling distributed transactions in datacenters **Ongoing**
Distributed key-value store with Lattice, a novel logging framework that handles replication and recovery for distributed transactions, to improve the end-to-end throughput of transactions over datacenter networks by 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 effectively utilize the low bandwidth of Persistent Memory and CXL-attached storage devices.

Faster and cheaper data analytics in the cloud using HarvestVMs **Ongoing**
Distributed caching and computation using harvested resources in the cloud to generate and store intermediate results for improving the efficiency of data analytics at lower cost.

PUBLICATIONS

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

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

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.

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

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

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

SERVICE

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

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

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

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

Systems seminar | Lab for Advanced Systems Research **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