Anwesha Saha

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Summary

My work involves designing practical, data-aware structures that exploit sortedness and data distribution to reduce latency and memory footprint by evolving traditional structures like wavelet trees and extending to novel structures like Constellation Maps - a geometric approach to permutation mapping. I am also exploring these ideas in a multi-dimensional spatial indexing context.

Education

Ph.D. Computer Science, Boston University Sep 2024 – Present

Research Advisor: Manos Athanassoulis

Masters Computer Science, Boston University 2022 – 2024

Thesis: Tuning LSM Trees using Bayesian Optimization

Professional Experience

Software Developer, Oracle — Bangalore, India 2019 – 2022

Built performance tooling, worked on UI migration to OJET, and automation for SIP-centric monitoring (Oracle Communications Session Monitor), modernizing diagnostics and test coverage.

Research Intern, Center for Science & Industrial Research — Bangalore, India 2019

Implement a junction-density-aware signal control in simulation, demonstrating lower waiting times on synthetic workloads using TraCI-SUMO for a neural network based logic.

Publications

- A. Huynh, A. Saha, H. Chaudhari, M. Athanassoulis, "AXE: A Task Decomposition Approach to Learned LSM Tuning" |*PVLDB*, to appear.
- A. Saha, A. Raman, R. Marcus, M. Athanassoulis, "Exploring Wavelet Trees as Space-Efficient Physical-to-Sorted Mapping for Learned Indexes" |*AIDB @ VDLB*, 2025.(Honorable Mention)

Service

SIGMOD Availability & Reproducibility Reviewer 2026 (ongoing)
SIGMOD Availability & Reproducibility Reviewer 2025

Skills

Technical	C/C++, Python, SQL, Java, TypeScript, Docker, Jenkins, Git, Selenium, Robot Framework, Nginx, Flask, React, Next.js
Research	LSM Trees, B+-Trees, Indexing, Bayesian Optimization, Wavelet Trees, RadixSpline, RocksDB
Teaching	Graduate Intro to Database Systems (current), Software Design Principles, Intro to Databases & Data Mining, Full Stack Development