Adhitha Dias

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Summary

I am a Ph.D. student at Purdue ECE with more than 6 years of experience as a research assistant and a software engineer. My interests lie in compilers, programming languages (PL), systems, and high-performance computing. I currently work on compiler optimizations for sparse tensor computations. I am looking for an internship for the summer of 2025.

Education

Purdue University, West Lafayette, IN — Jan 2021 - Dec 2025 (expected)
PhD in Electrical and Computer Engineering
Thesis: Sparse Tensor Algebra Compiler Optimizations | Advised by: Prof. Milind Kulkarni
M.S. in Electrical and Computer Engineering (GPA 4.00/4.00) — Jan 2021 - May 2023
Coursework: Compilers, Programming Languages, Algorithms, Parallel Programming, Accelerators (GPU), Computer Architecture, Distributed Systems, Operating Systems, Database Systems, Deep Learning, Linear Algebra, Graph Theory

University of Moratuwa, Sri Lanka
B.Sc. Engineering (Hons) in Electronic and Telecommunication Engineering (GPA 4.05/4.20) — Sep 2014 - Dec 2018

Publications

- **Adhitha Dias**, Logan Anderson, Kirshanthan Sundararajah, Artem Pelenitsyn, and Milind Kulkarni "SparseAuto: An Auto-scheduler for Sparse Tensor Computations using Recursive Loop Nest Restructuring" in *The Object-Oriented Programming, Systems, Languages, and Applications*, OOPSLA 2024 [ACM DL].
- **Adhitha Dias**, Kirshanthan Sundararajah, Charitha Saumya, and Milind Kulkarni "SparseLNR: Accelerating Sparse Tensor Computations using Loop Nest Restructuring" in *International Conference on Supercomputing*, ICS 2022.
  Best Paper Award [ACM DL].
- **Adhitha Dias**, Hasitha Prashan, Yasod Rasanka, Menusha Munasinghe, Ranga Rodrigo, and Peshala Jayasekara "Deep Learning of Augmented Reality Based Human Interactions for Automating a Robot Team" in *International Conference on Control, Automation, and Robotics*, ICCAR 2020. [IEEE Xplore].

Experience

Graduate Research Assistant, Purdue University, United States — Jan 2021 - Present
- Designed and implemented compiler passes for optimized kernel fusion for sparse tensor algebra computations.
- Performed individual research on sparse tensor kernel optimizations.
- Designed and Implemented an auto-scheduler for sparse tensor kernel fusion.
- Achieved speedups of 0.86-1997x compared to the Tensor Algebra Compiler (TACO) baseline.
- Designed and implemented auto-schedulers for schedule space exploration of sparse tensor contractions.

Software Engineering Intern, Meta, Menlo Park, CA — May 2024 - Aug 2024
- Added float8 compiler support for graph-mode covering end-to-end flow from Pytorch to Glow/MTIA (Meta Training and Inference Accelerator) compiler.
- Implemented reference linear kernel (float8), quantization, and dequantization kernels (float8 to/from bfloat16).
- Integrated CI tests for graph-mode workflow.

Research Scientist/Engineer Intern, Adobe Research, San Jose, CA — May 2023 - Aug 2023
- Achieved 2-4x speedups for Adobe FireFly training by introducing activation checkpointing.
- Performed research on introducing model parallelism to Adobe FireFly training.

Software Engineer, Sysco LABS, Sri Lanka (Branch of Sysco Corporation, Houston, TX) — Feb 2019 - Dec 2020
- Performed various tasks related to frontend/backend development, database, security, and distributed systems.
- Implemented the most complex sections in a multi-location graph-based menu management system.
- Designed and developed first cut versions for merchandising user management, authorization and authentication.
- Engaged in a variety of tasks in design, development, deployment, quality assurance, and customer support.

Research Intern, School of Information Systems, SMU, Singapore — June 2016 - Dec 2016
- Carried out individual research in indoor localization using wifi packet-based angle of arrival techniques.
- Developed algorithms to automate checkpoint acquisition for a video-based leader-follower indoor navigation system using augmented reality.

Skills

- Programming Languages: C/C++, Python, CUDA, Java, JavaScript, Scala, and Coq.
- Other: OpenMP, MPI, PyTorch, CMake, Bash/Shell Scripting, Docker, GEM5, SQL, CouchDB, Neo4J, Janus Graph, Spring Boot, React/Redux, AWS, SSO, Android, OpenCV.

Achievements

- *The Best Paper Award* At the International Conference on Supercomputing 2022.
- ACM Grants to Attend *Programming Language Design and Implementation (PLDI) Conferences 2021 and 2022.*
- *Dean's List Award* Included in the Dean's List in all 8 semesters for obtaining a high GPA during Undergrad.
- Ranked 1^{st} (out of 32*k* students) in Sri Lanka in Math Stream at the University Entrance Examination 2013.
- Placed 4^{th} in *Sri Lanka Mathematics Olympiad Competition 2013.*

Professional Qualifications/Activities

- **Seminar Co-Coordinator**, Purdue Programming Languages and Systems Research Group (PurPL). Aug 2022 - Jul 2024
- **Member of Artifact Evaluation Committee (AEC)**, PPoPP 2023 & 2024. Nov 2022 - Mar 2024
- **President**, Sri Lankan Student Association at Purdue (SLAP). Aug 2022 - Jul 2024
- **Master Java Developer**, Institute of Java and Software Engineering (IJSE), Sri Lanka. Aug 2013 - May 2014