BUDVIN EDIPPULIARACHCHI

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EDUCATION

Tufts University *2023 - present*
PhD candidate in Computer Science
CGPA : 4.0/4.0
Graduate research assistant, advised by Prof. Hari Sundar

University of Moratuwa, Sri Lanka *2018 - 2022*
B.Sc. Engineering (Hons) - Specialized in Computer Science Engineering
CGPA : 4.12/4.2 [equivalently 3.97/4.0]
Ranked 1st among 128 students
Dean's Honors List in all semesters 1-8

The Cornell, Maryland, Max Planck Pre-doctoral Research School 2022 *August 2022*
August 1-6, 2022, Max Planck Institute, Saarbrücken, Germany.
Selected to be in 80 participants out of 400+ applicants. A summer school with a week of lectures and panel sessions with researchers and faculty to get in touch with latest research trends and grad school application process.

RESEARCH INTERESTS

My primary research is in the intersection of scientific computations on distributed systems and graph decomposition. I am interested in utilizing graph algorithms to optimize computation and communication costs in scientific computations. I am also interested in building compilers for Domain Specific Languages for Partial Differential Equation solvers.

RESEARCH EXPERIENCE

Approximate Mesh Partitioning for Scientific Computations *2023 - present*

- Developing an efficient, approximate mesh partitioning scheme for large scientific computations on heterogeneous distributed systems,

Optimizing FINCH for Multiple Hardware Backends *2023 - present*

- Optimizing the compilation pipeline of FINCH using MLIR/IREE compiler infrastructure for efficient code generation for multiple hardware backends.

Accelerating k-mer Counting in a Commodity Cluster Environment *2021 - 2022*

- Supervisors : Prof. Sanath Jayasena, Gunavaran Brihadiswaran
- Research to explore the ability to utilize a commodity computer cluster to efficiently perform K-mer counting. Research is mainly based on searching for optimization strategies with MPI framework to obtain performance gains which can be scaled for a distributed environment.
- Technologies: MPI, C++

Software Profiling of ALICE O2 *2022*

- Supervisors : Dr. Latchezar Betev, Prof. Indika Perera, Dr. Gayashan Amarasinghe
- Profiling the new software suite ALICE O2 developed by CERN for their run 3. Research involves executing sample workflows, profiling them with memory and CPU profiling tools to identifty potential bottlenecks and improvements to efficiently utilize the ALICE grid infrastructure.
- Technologies/Tools: C++, Perf, Intel Vtune

WORK EXPERIENCE

Expert Intelligence *2023*
Software Engineer

Cloud infrastructure automation and full stack development.

IXD Labs *2022 - 2023*
Founding member & DevOps Consultant

Backend development and cloud infrastructure management for web-based products and services.

Mitra Innovation *2020 - 2021*
Software Engineering Intern

6 month software engineering internship covering AWS services, event driven software design, multi-tenant architecture, real-time data streaming, performance optimization in web apps and 3D animations with vector mathematics.

TEACHING EXPERIENCE

University of Moratuwa - Dept. of Computer Science Engineering *2021 - 2023*
Teaching Assistant

Modules : CS3062-Theory of Computing, CS2022-Data Structures and Algorithms, CS1033-Programming Fundamentals
Preparing assignments, weekly quizzes and assisting with weekly practicals and tutorials. Grading assignments and exams. Assist in conducting semester exams.

PUBLICATIONS

· **Edippuliarachchi B.**, Damika Gamlath, Ruchin Amaratunga, Gunavaran Brihadiswaran, and Sanath Jayasena. 2022. Quill: A Memory Efficient k-mer Counting and k-mer Querying Tool for Commodity Clusters. In Proceedings of the 14th International Conference on Bioinformatics and Biomedical Technology (ICBBT '22). https://doi.org/10.1145/3543377.3543389

· **Budvin Edippuliarchchi**, Hari Sundar. 2024, fastPart: Scalable Mesh Partitioning on Distributed Architectures. *Pending Review*

ACHIEVEMENTS & AWARDS

Gold Medal - Dept. of Computer Science and Engineering, Univ. of Moratuwa *2022*
· Awarded for achieving the best overall GPA for computer science specialization.

Champions - Aces Coders v8.0 *2020*
· One of the largest competitive programming competitions in Sri Lanka which is organized by the University of Peradeniya.

Top 100 - IEEEXtreme *2021, 2020*
· IEEEXtreme 14.0 (2021) - Global Rank 71st
· IEEEXtreme 13.0 (2020) - Global Rank 92nd

Champions - UoJ Coders *2019*
· 12-hr competitive programming competition organized by the University of Jaffna.

1st Runners Up - RealHack *2019*
· An overnight hackathon preceded by a competitive programming round, organized by the University of Kelaniya.

Finalists - Robofest *2019, 2018*
· A robotic competition organized by SLIIT to build the fastest robot to solve the classic micromouse challenge.

Finalists - Sri Lanka Robotics Competition *2018*

· The largest robotics competition in Sri Lanka organized by the University of Moratuwa.

Mahapola Higher Education Merit Scholarship - *2018*

· Awarded for outstanding performance in GCE A/L examination.

Bronze Medalist - Sri Lanka Mathematics Olympiad (Junior) *2008*

· Preliminary mathematics olympiad round held in Sri Lanka to qualify for the International Mathematics Olympiad competition.

SKILLS

Technical Fields	Algorithms, HPC, Distributed and Parallel Computing, Backend Development, AWS Cloud Native Development
Programming Languages	C, C++, Python, Java, Julia, SQL, JavaScript
Cloud Technologies	AWS
Languages	English (professional proficiency, TOEFL iBT score: 110/120), Sinhala (native proficiency)