

Kabilan Mahathevan

Computer Science Engineer & Researcher

+94 776974164 kabilan.19@cse.mrt.ac.lk Colombo, Sri Lanka
in/kabilan-dev github.com/KabilanMA kabilan.info

Profile

Passionate about advancing technology and contributing to societal progress, I am an enthusiastic Computer Science and Engineering professional with a keen interest in High-Performance Computing, Programming Languages & Compilers, Program Analysis and Computer Systems. My dedication lies in optimizing software to enhance computational performance within existing hardware constraints. With a strong drive for learning and adaptation, I am committed to leveraging my skills to make meaningful contributions in these dynamic fields.

Areas of Interest & Expertise

High Performance Computing - Programming Languages & Compilers - Program Analysis - Computer Systems - Machine Learning & Artificial Intelligence

Education

BSc Computer Science and Engineering (*University of Moratuwa*) **Colombo, Sri Lanka** 2019-2024

- CGPA: **3.92/4.2** (First Class)
- Dean's List Semesters: 7/8
- Significant Coursework: Data Structures and Algorithms - Advanced Algorithms - Concurrent Programming - Distributed Systems - Advanced Operating System - Database Management System - Graph Theory - Software Architecture and Design
- Batch Representative for 5th and 6th Semesters.

G.C.E Advanced Level (V/Vavuniya Tamil Madhya Maha Vidyalayam) **Vavuniya, Sri Lanka** 2016-2018

- Merit Pass - Physical Science Stream
- Z-Score: **1.9835**
- Island Rank: **557/32,304** (Top 1.7%)
- Received a scholarship (Mahapola) to complete undergraduate studies.

Research Experience

Fuzzing Cloud PaaS Systems (*University of Moratuwa*) **Colombo, Sri Lanka** 07/2023 - 06/2024

Developed a specialized fuzzing technique to systematically uncover **reconciliation bugs** within **Kubernetes**, as a vital component of my final year project. This initiative aims to fortify the security posture of cloud Platform as a Service (PaaS) environments by addressing critical vulnerabilities in scheduler components in reconciling the state. The empirical data on the reconciliation bug in Kubernetes has been accepted to **APSEC 2024**.

Dataset: <https://doi.org/10.6084/m9.figshare.24774516.v2>

Supervisors:

- Dr. Sunimal Rathnayake**
- Dr. Ridwan Shariffdeen**

Visiting Research Scholar (*TEST Lab, NUS*) **Singapore** 09/2024 - present

- Working with **Prof. Manuel Rigger** in increasing the performance of the mutation testing for SQL queries.

Professional Experience

Software Engineer (*Sysco LABS*) **Colombo, Sri Lanka** 06/2024 - 09/2024

- Worked on a competition organizing and judging platform from backend to frontend.
- Implemented the unit test suite, regression testing, UI functional testing suite, and the relevant CI pipeline.
- Supervised and mentored by **Isuru Mohottala** and **Nishantha Hettiarachchi**.

- Teaching Assistant for CS3063 - Theory of Computing
 - Supervisor: **Prof. Sanath Jayasena**
- Teaching Assistant for CS2043 - Operating Systems.
 - Supervisors: **Dr. Buddhika Karunaratne** and **Ms. Vishaka Nanayakkara**
 - Material Created: Docker Container Created for Evaluation Purpose of **Pintos** Project: kabilanmahathevan/pintos
- Teaching Assistant for CS3043 Database System.
 - Supervisor: **Dr. Sapumal Ahangama**

Software Development Engineer Intern (*The Software Practice*) **Cecil Court, Singapore** 01/2023 - 06/2023

- Worked on **LEAP** project for Building And Construction Authority (**BCA**), Singapore.
- Worked with the front-end team to create a better and user-friendly interface.
- Created the entire Regression Testing Suite for the project under **Tony Tieu Ha Phong**.
- Implemented CI pipeline, boosting CI/CD speed by **30%** across the project.

Projects

P2P Torrent Client

01/2023 - 06/2023

- Developed a custom **Torrent Client** to address adware concerns, ensuring a clean and personalized downloading experience. Required expertise in networking principles and BitTorrent system. Successfully delivered ad-free downloads, with potential for enhancements such as magnet link support.

Repository: KabilanMA/p2p-torrent-client

Workflow Management System (*Test Deployment*)

Galle Irrigation Dept., Sri Lanka 09/2023 - 12/2023

- Developed a workflow management system to prioritize and automate the traditional paperwork system of **Galle Irrigation Department, Sri Lanka**.

Repository: KabilanMA/workflow-management-system-frontend

Supervisor: Dr. Gayashan Amarasinghe

Skills

- | | | | |
|----------|--------|----------------|-------------------|
| • C++ | • Java | • JavaScript | • \LaTeX |
| • Python | • Go | • Git & GitHub | |

Languages

- | | |
|---------------------------|-------------------------|
| • English [Fluent] | • Tamil [Native] |
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References

Dr. Sunimal Rathnayake

PhD (NUS), BSc Eng (Hons) (Moratuwa)
Senior Lecturer,
Dept. of Computer Science and Engineering,
University of Moratuwa,
Sri Lanka.
Email: sunimalr@cse.mrt.ac.lk

Dr. Ridwan Shariffdeen

PhD (NUS), BSc Eng (Hons) (Moratuwa)
Research Fellow,
School of Computing,
National University of Singapore,
Singapore.
Email: rshariffdeen@gmail.com