

# Kabilan Mahathevan

Computer Science Engineer & Researcher

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## 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 submitted to **APSEC 2024** and is currently under review.

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

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**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

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|----------|--------|----------------|-------------------|
| • C++    | • Java | • JavaScript   | • $\text{\LaTeX}$ |
| • Python | • Go   | • Git & GitHub |                   |

## Languages

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|---------------------------|-------------------------|
| • <b>English</b> [Fluent] | • <b>Tamil</b> [Native] |
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## References

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**Dr. Sunimal Rathnayake**

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