

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
- 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**
- National Rank: **557/32,304** (Top 1.7%)
- Received a merit-based 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 (*University of Moratuwa*) **Colombo, Sri Lanka** 07/2023 - 06/2024

- CS3063 - Theory of Computing**, under Prof. Sanath Jayasena.

- **CS2043 - Operating Systems**, under Dr. Buddhika Karunaratne and Ms. Vishaka Nanayakkara.
 - Material Created: Docker Container Created for Evaluation Purpose of **Pintos** Project: kabilanmahathevan/pintos.
- **CS3043 Database System**, under 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

Other project details can be found in my GitHub profile.

Skills

- C++
- Java
- JavaScript
- L^AT_EX
- Python
- Go
- Git & GitHub

Languages

- **English** [Fluent]
- **Tamil** [Native]

Extra-curricular Activities

Volunteered teaching work for under-privileged remote areas. 01/2019 - 01/2022

- Volunteered in All University Student Development Association - Vavuniya (AUSDAV)
- Teaching secondary school classes to underprivileged students from remote areas.
- Conducting annual evaluation exam of GCE A/L in the northern province.

Badminton 08/2010 - 12/2014

- Two times (2012, 2013) Provincial Level (Northern Province) Champion.

References

Dr. Sunimal Rathnayake

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