



Chathura Gunasekara

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Portfolio

Research Interests

- Post Quantum Cryptography
- Secure Embedded Systems
- Quantum Computing
- Robotics and Automation

Core Skills

- **Programming Languages:** Python | Java | C++ | C | VHDL | Arduino
- **Technical Fields:** Embedded Software Engineering | Secure Software Development | Post Quantum Cryptography | Robotics and Automation
- **Robotics:** ROS2, Gazebo, RViz
- **Machine Learning:** Numpy | Pandas | scikit-learn | Pytorch
- **Databases:** MySQL | SQLite | NoSQL
- **Tools & Services:** Git | Streamlit
- **Backend Development:** NodeJS | Express | FastAPI

Publications

ERU Symposium 2023 [Best Paper Nominee]:
Real-time, Scalable and Extensible Object
Filtering and Detection System Using Kinect
Sensor and ROS2 Foxy implemented with C++

MERCon 2025 [Best Paper Nominee]:
Reconfigurable Hardware Design of NTT-
Based Polynomial Multiplication Accelerator
for Post Quantum Cryptography

Education

BSc Eng Hons, Computer Science & Engineering

University of Moratuwa

2021 - 2025

Specialized in Integrated Computer Engineering

- **CGPA : 3.90 / 4.0**
- **Dean List (Semester 2,3,4,5,7 & 8)**
- **Conducted fully in English Medium**

Experience

Research Student

2025 Sep - Present

Full Time | University of Moratuwa

- Conducting a research focusing on Quantum computing and Post Quantum cryptography

Department of Computer Science and Engineering Teaching Assistant

CS2053 - Computer Architecture

2024 Jul - 2024 Nov

- Conducted lab sessions for 200 semester 3 students under supervision of Dr. Chathuranga Hettiarachchi

CS3340 - Robotics and Automation

2025 Jan - 2025 Jun

- Conducted lab sessions on **ROS2** using tools such as **Gazebo**, **RViz** for semester 3 students under supervision of Dr. Sulochana Sooriyaarachchi.

WSO2

Software Engineering Intern

2023 Dec - 2024 Jun

- Carried out a research project as a part of the **IAM team** developing and implementing a **PoC** for an authorization engine for the IS Server.
- Identified and wrote articles regarding **modern authorization technologies** ([Medium](#)).
- **Tech Stack:** Java, XACML, Topaz, OPA, Zanzibar

ABU RoboCon - National Team

2023 Mar - 2023 Aug

Robotics Engineering Lead

- Designed, implemented and programmed robots for the team representing Sri Lanka at the ABU RoboCon International competition.
- **Tech Stack:** ROS2, ESP32, Fusion 360, C++

Research Projects

Real-time, Scalable and Extensible

Object Filtering and Detection System

2023 Oct - 2023 Dec

- Developed a modular, lightweight ROS2-based C++ system for real-time object detection of basic shapes and colors, with runtime-extensible custom filters for optimized performance.
- Published [Research Paper](#) at the ERU Symposium 2023.
- **Tech Stack:** C++, ROS 2, Linux

Research on a High-Speed Hardware

Accelerator for CRYSTALS-Kyber Post-Quantum Cryptography Algorithm

2024 Jun - 2025 Jun

Final Year Research Project

- A research project on implementing a hardware accelerator to efficiently execute complex mathematical calculations such as modular polynomial multiplication for CRYSTALS-Kyber Post Quantum Cryptography Algorithm.
- **Tech Stack:** VHDL, Xilinx Vivado, FPGA

Memberships

- IEEE Student Membership
- Gavel Club - University of Moratuwa

Certifications

- [Algorithmic Toolbox - UC San Diego \(Coursera\)](#)
- [Pandas Certification - Kaggle](#)
- [Fundamentals of Deep Learning](#)

Soft Skills

- Communication
- Adaptability
- Teamwork
- Leadership
- Problem-solving
- Time Management
- Critical Thinking

References

Prof. Chandana Gamage

Senior Lecturer
Department of Computer Science and Engineering
University of Moratuwa
chandag@cse.mrt.ac.lk

Dr. Sulochana Sooriyaarachchi

Senior Lecturer
Department of Computer Science and Engineering
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Dr. Kutila Gunasekera

Senior Lecturer
Department of Computer Science and Engineering
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Projects

Secure E-voting system

2024 Oct - 2024 Nov

- A secure e-voting platform using RSA-based blind signatures to ensure confidentiality, integrity, authenticity, untraceability, and supporting vote pooling, signing, and validation.
- **Tech Stack:** *Python, Flask, Streamlit*

Python based Micromouse - Simulator

2022 May - 2022 Jul

- Implemented a Python Pygame-based simulation of a micro mouse and an Arduino UNO (At Mega328) based Micromouse, which is a maze-solving robot. Used Flood Fill and Backtracking algorithms for solving the maze.
- **Tech Stack:** *Python*

IOT Air Quality Node

2022 Dec - 2023 Feb

- An embedded device that measure air quality by measuring CO2 concentration, Dust Matter concentration, humidity and temperature. Integrated with a node-red dashboard to display the statistics and control the device using the dashboard
- **Tech Stack:** *Node-Red, C++*

FPGA Board based Nanoprocessor

2022 Jan - 2022 Apr

- Basys 3 FPGA board-based nanoprocessor designed to emulate a Harvard architecture-based simple processor that can run a simple program of adding 3 consecutive numbers. Designed in VHDL using the Vivaldo 2018.2 software.
- **Tech Stack:** *VHDL*



Awards and Honours

IEEEExtreme 16.0 - 2023: All Island 15th position

24-hour global competitive programming competition organized by IEEE.

ABU RoboCon 2023 - 1st Place in Sri Lanka

Represented Sri Lanka International Robotics competition for Asia Pacific Region

IMC 2022 - Represented University of Moratuwa

International Mathematics Competition for university undergraduates

RealHack 4.0 Hackathon - Runners Up

In-person 8 hour web app hackathon organized by UOK

International Young Mathematicians Convention

Bronze medal winner at mathematics competition held in Lucknow, India.

University Colors Insignia - 2022, 2023, 2024

Table Tennis Mens Team Champions at Inter university games for 5 consecutive years

SLUSA Colours - 2024

Top performing individual players in Sri Lankan universities

VOCE Public Speaking Competition 2023 - 1st Runners Up

1st Runners up - VOCE Public speaking competition



Volunteering

Department of Computer Science and Engineering Department Representative

Semester 4, 5 and 6

2023 Jan - 2024 Jun

Vice Captain

Mens Table Tennis Team, University of Moratuwa

2023 Dec - 2024 Dec

Treasurer

Classical Music Society, University of Moratuwa

2023 Dec - 2024 Dec

Lead Organizer and Creative Director

CSE40 'Sakura' Musical Event

2025 Feb - 2025 Apr