

# Thuvaragan Sooriyakumaran

ENGINEERING UNDERGRAD · DESIGNER · DEVELOPER

✉ thuvaragan28@gmail.com 🌐 thuvasooriya 🌐 thuvasooriya 📧 @thuvasooriya

A simple human from planet earth, who loves to integrate art, science and technology to create a smile in the face of others. Moderate experience in graphic manipulation, web development, low level programming, robotics, digital design and performance optimization. Currently obsessed with RISC-V and open-source digital design tool-chains.

## Projects

### ViT Accelerator IP for a custom RISC-V core in FPGA

🌐 thuvasooriya/vit-malware-detector

DVCON 24 - INDIA

May 2024 - Present

- Research and Implementation project for DVCON24 to design a novel ViT accelerator IP for a custom RISC-V core
- Selected in the 20 teams from >100 teams in Stage 1, Stage 2a work ongoing...

### RISC-V RV32I pipeline-processor research and implementation

SEMESTER 5 GROUP PROJECT

Jul 2024 - Present

### Robot manipulator with 4 DOF

SEMESTER 5 GROUP PROJECT

Jul 2024 - Present

### Image segmentation research and evaluation for bin-picking

🌐 mora-bprs/sam-model

SEMESTER 4 GROUP PROJECT

March 2024 - June 2024

- Extensive literary review and recreation of image segmentation and CNN model papers in python
- Development of simple gripper mechanism and associated PCB for testing
- Extensive testing, benchmarking and documentation

### Portable doctor companion

🌐 biosense-ai/biosense-ai-web-server

MECHA 23 - 2ND RUNNER UP

Aug 2023 - Oct 2023

- Integrating ECG monitor and SpO<sub>2</sub> sensor with machine learning to provide helpful information in a web dashboard in any device to make screening process easier for doctors
- Orange-Pi Zero 2W SBC is used with custom Linux to integrate monitoring, web-server and prediction algorithms

### Multi-modal analysis of ECG, heart sounds and lung sounds

🌐 biosense-ai/model-xai

BRAINSTORM 24

Mar 2024 - Present

- Continuation of the portable screening device, focusing on the prediction of the model
- Validation of results using back propagation to identify decisive sections

### Analog ECG Monitor Development

SEMESTER 3 GROUP PROJECT

Aug 2023 - Oct 2023

### Smart plug development

🌐 thuvasooriya/pluggu

SEMESTER 2 GROUP PROJECT, SHORT COURSE GROUP PROJECT

Mar 2023 - May 2023

- Smart plug with remote control through LAN and WAN, developed around ESP32-S3 micro controller
- Another smart plug design and implementation was followed as part of a short course

### Two wheeled drive robot

🌐 team-itro/sem3slrc

SEMESTER 3 GROUP PROJECT

Aug 2023 - Dec 2023

- Prototyped, designed and implemented a robot that is capable of following white, colored lines
- Custom arm mechanism was designed and integrated to achieve required object manipulation

## Skills

**Programming** C, System{Verilog}, Python, JavaScript, C++, Zig, Lua, Nix

**Languages** English, Tamil, Sinhala, Japanese, French

**Programs** KiCAD / Altium Designer, SolidWorks, MATLAB, LT Spice, Verilator

## Achievements

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**Lead** Deputy Batch Representative, Engineering Faculty, University of Moratuwa,  
Senior(Head) Prefect, 2020, Jaffna Hindu College

**Awards** Right To Information Act, National Debate - 1st Place, Tamil, Team Lead,  
All Island Senior Dialog Drama - 3rd Place

## Education

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### BSc. in Engineering - Electronics and Telecommunication

UNIVERSITY OF MORATUWA

Colombo, SriLanka

2021 - Present

### Chartered Global Management Accounting (CGMA)

ACHIEVERS LANKA | LEVEL 1 COMPLETED

Colombo, SriLanka

2021 - Present

### Embedded Product Design for IoT

SHORT COURSE BY ENTC DEPARTMENT UOM WITH SKILLSURF.LK

Colombo, SriLanka

Aug 2023 - Nov 2023

- PCB design, firmware development, enclosure design in OnShape, end 2 end connectivity in web dashboard

### System {Verilog} for ASIC/FPGA Design & Simulation

SHORT COURSE BY ENTC DEPARTMENT UOM WITH SKILLSURF.LK

Colombo, SriLanka

Jan 2023 - May 2023

- Assignment 3 - ASIC flow report for MVM UART using SAED 32nm EDK & Synopsys design compiler
- Assignment 4 - FPGA implementation and demo of MVM UART

### Full Stack Web Development (MERN Stack)

UKI CODING SCHOOL - DIGITAL COHORT 1

Jaffna, SriLanka

Feb 2021 - July 2021

### Secondary Education

JAFFNA HINDU COLLEGE | G.C.E. OL - 9A | G.C.E. AL - 3A

Jaffna, SriLanka

2011 - 2020

## Experience

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### Junior Graphic Designer

MATHI COLOURS PRINTERS

Jaffna, SriLanka

2020 - 2021

- Flyer creation and editing
- Graphic manipulation
- Magazines and books compilation and editing

### Digital Marketing Assistant

ECOSTEEM PVT. LTD.

Jaffna, SriLanka

2021

- Social media content creation and moderation
- Product modeling and marketing image generation
- Banner designs

## References

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### Dr. Ranga Rodrigo

B.SC. ENG. HONS. (MORATUWA), M.E.SC. (WESTERN, CANADA), PH.D. (WESTERN, CANADA), SMIEEE  
SENIOR LECTURER, UNIVERSITY OF MORATUWA

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### Senthilmaran Ratnam

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