

# Thiriloganathan Manimohan

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## SUMMARY

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I am a highly motivated and confident final-year undergraduate in the Department of Electronic and Telecommunication Engineering at the University of Moratuwa, with a strong interest in Machine Learning Deep Learning, Electronics Telecommunications, Robotics Automation, Web App Development, UI/UX Design, and Data Science. I am self-directed, flexible, and eager to pursue a PhD opportunity to deepen my knowledge and skills while contributing effectively to my field. I believe in teamwork and always strive to achieve the best outcomes for the group. [Take a look at my portfolio.](#)

## EDUCATION

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2021 - present B.Sc(Hons) in ENTC Engineering. at **University of Moratuwa** (CGPA : 3.68/4.0)  
2020 - 2021 Business Degree in CIMA (Level - 01) at **Wisdom Business Academy**  
2019 - 2020 Human Resource Management at **International Business Management Institute**  
2017 - 2019 G.C.E Advanced Level at **J/Mahajana college** (3As with Z-score=2.6266)  
2005 - 2016 Primary & Secondary at **J/Mahajana college** (9As)

G.C.E A/L - 3As in Physical science stream and 12 th in district & 116 th in island with Z-score = 2.6266  
G.C.E O/L - 9As including ICT and Commerce & Business in English medium.

Deep Learning for Vision, Introduction to Engineering Optimization, Image Processing and Machine Vision, Pattern Recognition, Digital Signal Processing, Digital IC Design, Data Structures and Algorithms(A), Analog Circuit Design, Fundamentals of Computer Organization and Design, Communication Network Engineering (A+), Communication System Engineering(A), Robot Design and Competition, Programming Fundamentals(A-)

## INTERNSHIPS & EXPERIENCES

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- **ML & AI-related research (Visiting research student)** at **Singapore University of Technology and Design**, I did a six-month internship in SUTD from November 2023 to May 2024. I worked on the following projects, which resulted in one research paper.
  - Use of advanced vision systems and ML for AM closed loop control
  - Use of ML to identify optimal printing parameters
- **AI/ML intern in the Software Department/ iPartner X**. I am doing a four-month internship from August 2024 to December 2024.
  - I am assisting with their AI Interview Platform project

## PUBLICATIONS-ONGOING & PEER REVIEWS

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### Spring-Driven Deep Surrogate for Advanced Soft Robotic Grippers - Under Review

I will be the **second author** of this paper. This study introduces a novel approach that integrates a series of springs as a low-fidelity solver with a deep neural network (DNN) model, trained end-to-end to enable efficient predictions with minimal training data.

### Vision Generative AI - (Preparing)

We are planning to create a generative AI like ChatGPT for vision data.

# PROJECTS

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- **DENSELY PACKED PRODUCT DETECTION**

**Deep Learning & Image processing and Machine vision** | Group | Duration:- 3 months | Python | This research explores how YOLOv8 object detection can transform retail inventory management by addressing challenges on densely packed supermarket shelves, with a focus on the SKU-110K dataset and broader industry implications.

- **Machine Learning Projects**

**Machine Learning & Deep learning** | Individual - Guided | Completed | Duration:- 5 months | Python | This includes some machine learning projects I completed while learning about ML concepts | Brain Tumor Detection | Diabetes Detection | Heart Disease Detection | AI Room Booking Chatbot | Classification of Arrhythmia Using ECG Data | Human Activity Detection | Medical Chatbot | Wine Quality Prediction

- **Agri Link**

**Webapplication Development** | Group - 2023 | Completed | Duration:- 2 months | Salesforce | AgriLink aims to promote fairer trade and a prosperous future for Sri Lanka's agriculture by addressing challenges and promoting direct producer-buyer links.

- **Flower Stock Exchange**

**App Development** | Pair - 2023 | Completed | Duration:- 3 months | C++, IntelliJ Clion | This undertaking was completed in the context of the "C++ Workshop" provided by the "London Stock Exchange Group (LSEG)." Developed a trading and exchange application that enables users to engage in buying, selling, and swapping stocks. Integrated sockets to implement virtual client and server systems in the programming.

- **ECG Heart Monitor**

**Bio-Medical** | Group | Completed | Duration:- 3 months | Analog project - 2023 | PCB Design | Solidworks | A heart ECG monitor is a device that uses electrodes to capture 3-lead ECG signals. We have applied our analog electronics expertise to enhance signal quality while amplifying the necessary signals. We have to construct an analog front end that accepts data from the ECG probes and outputs a clean waveform of the ECG.

- **LED Flash**

**Electronics** | Individual - 2023 | Completed | Duration:- 3 months | PCB Design | Solidworks | This 12V Portable LED Flash initially designed to avoid interruption due to power failures. The key reason to build this Portable LED Flash is to get continuous light during power failures. This is able to act as a mobile power bank and router backup.

- **Network Design and Backbone Design & Network Routing Simulation - OSPF**

**Telecommunication** | Group | Completed | Duration:- 3 weeks | Packet Tracer | Backbone network for University of Moratuwa, LAN network for ENTCT department and Assign IP addresses and Network Routing Simulation - OSPF

- **Linear Power Supply**

**Electronics** | Group | Completed | Duration:- 3 weeks | PCB Design | Input range 16V to 20V ,Output range 8V to 14V and current limiting is 100mA

- **Attendance programme app** | **Date: 03rd August 2024**

**Web Application - Development** | Individual | Completed | Duration: 1 month | A web application for managing attendance with user authentication, developed using HTML, CSS, JavaScript, Node.js, and MongoDB Atlas. Hosted on a free platform.

To view the app :- [Click here](#)

- **Autonomus Moving Robot**

**Robotics & Automation** | Group | Completed | Duration:- 2 months | Sri Lankan Robotics Challenge - 2023 | Line following | wall following | maze solving | Robotics has become increasingly popular, and E-club and the Department of Electronics and Telecommunication Engineering have staged the Sri Lankan Robotics Challenge (SLRC) ("Task") for nine consecutive years.

- **Processor Design & ISA Design**

**Computer Organization & Design** | Group | Completed | Duration:- 3 months | RISC - V | Processor design project for Continuous assignment in EN2031 module based on knowledge from Dr. Pasqual's lectures.

- **Maze-solving, line and wall following robot**

**Robotics & Automation** | Group | Duration:- 3 months | Completed | Virtual and Physical implementation - 2023 | Line following | wall following | maze solving | Both a simulated and a tangible version of the robot were generated. The simulated iteration was accomplished within Webots, while the physical realization was achieved through the utilization of an Arduino Mega. The robot's design was formulated to cater to both implementations using SolidWorks. (<https://cyberbotics.com>). Webots R2021b version for the simulation.

- **Design of FIR and IIR Filters**

**Signal Processing** | Individual - 2022 | Completed | Duration:- 3 months| FIR (Bandpass) | IIR(Bandpass) | The report discusses the procedure used to design FIR and IIR digital filters for prescribed specifications and its implementation on Matlab R2021a. The windowing method is used to truncate the impulse response, and the required digital filter is obtained by applying a bilinear transform to the transfer function of the analog filter.

- **Water Level Detector**

**Telecommunications** | Group - 2022 | Completed | Duration:- 3 months | PCB Design | Solidworks | We designed a project using Altium and SolidWorks to detect the water level in tanks to reduce water wastage and power cuts. As part of the course module EN1190 Engineering Design Project, we started the project in the beginning of the semester and completed it at the end of the semester.

## CERTIFICATES

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- **Deep Learning Specialization** - (DeepLearning.AI Stanford University)-**Neural Networks and Deep Learning(1/5)**
- **Machine Learning Specialization** - (DeepLearning.AI Stanford University)
- **Introduction to FPGA Design for Embedded Systems.** - (University of Colorado Boulder)
- **Introduction to Computer Vision and Image Processing** - (IBM)
- **Foundations of User Experience (UX) Design** - (Google)
- **Salesforce Certified Associate**-(Salesforce Trialhead)
- **System Verilog for ASIC/FPGA Design Simulation**-Department of Electronic Telecommunication Engineering, University of Moratuwa (ENTC, UoM)
- **Front-End Web Development , Python Programming , Web Design for Beginners , Python for beginners** - (Open Learning Platform - University of Moratuwa)
- **Technical Support Fundamentals** - (Google)
- **Salesforce, 23 Badges,9,600 Points,1 Trails** - (Trailblazer)
- **SLRC Advanced Workshop - ROS - 2023** - (University of Moratuwa)
- **KickStarter on Embedded System Design** - (Electronic Club of University of Moratuwa)
- **python for Data science, python Data structure, python core, and SQL** - (Sololearn)
- **python for machinelearning** - (great learning)
- **Data structure and algorithm using C++, Web development, python data Visualization, Python Data Analysis, and Python computervision** - (shapeAI)

## HONOURS, AWARDS,AND PARTICIPANS

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I have some professional memberships, honors,awards, and participants:

- **ICIIS 2023: Special session on advance in 6G Technology** - (Participant)
- **Dean's List- semester-04**
- **Huawei ICT Competition 2022 - 2023** - (Winner)
- **Mahapola Scholarship** - (2020)
- **IEEE Membership-(Professional)** - Membership number - 98709969 - membership certificate
- **National Mathematics Quiz Contest - 2019** - (Finalist)
- **National Science Quiz Contest - 2019** - (First place)
- **3rd place in 30th All island Chemistry Quiz - 2019** - (Institute of Chemistry)
- **Bushman's Thong Awarded Scout(CC and DC)- 2018** - (Honourable Award)
- **Subaha Scholarship - 2018** - (Multi-Talented student)
- **Know Your Rights - 2018** - (Finalist)

- [Tokyo super Quiz Contest - 2016](#) - (Finalist)
- [National GK Quiz](#) - (First place in 2010,2012,2013,2014 and 2016)
- [MoraXtreme 7.0 and IEEE Xtreme 16.0 - 2022\(1288th rank\)](#) - ([Participant-TeamM01](#))
- [Idealize - 2022](#) - (Finalist)
- [Yarl geek challenge - 2022](#) - (Semifinalist)
- [Codegoda - 2023](#) - (Participation)
- [HackX - 2022](#) - (Participation)
- [RealHack - 2023 March](#) - (Participants, 22th rank out of 203 teams)
- [Hackforce - 2021](#) - (Participants)
- Participant in [globalculturaljamboree](#) - (online - 2021)

## INFORMATION TECHNOLOGY SKILLS

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Programming Languages	Python, C/C++,JavaScript/TypeScript,Matlab, <del>LaTeX</del> : <i>Advanced</i> SQL,Java : <i>Intermediate</i>
Machine Learning Frameworks	PyTorch, TensorFlow: <i>Advanced</i> SciKit learn : <i>Intermediate</i>
Frameworks	React Native, React,Angular: <i>Advanced</i> Django : <i>Intermediate</i>
Data Analysis	Visual Studio, Git/GitHub, Jupiter Notebook and Colab: <i>Advanced</i> Wolfram Mathematica : <i>Intermediate</i>
Modeling and Simulation	Solidworks, Altium and Proteus : <i>Advanced</i> Quartus, MATLAB, Modelsim, Simulink, Webots, LTSpice and Vivado : <i>Advanced</i>
Designing	Photoshop,PremierPro : <i>Advanced</i> AfterEffects : <i>Intermediate</i>
Office Automation	<del>LaTeX</del> , MS Office (Excel, Word, PowerPoint) : <i>Highly Specialized</i>

## VOLUNTEERING, EXTRACURRICULARS AND OTHER ACTIVITIES

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I am doing volunteer activities, extracurriculars, and other activities:

- [Batch Representative - Department of Electronic and Telecommunications Engineering, University of Moratuwa](#) - (Semester 04, 05, & 06)
- [Junior & Senior Prefect in J/Mahajana college](#) - (2014 - 2019)
- [Vedio coordinator in PR branch - 2023/24 Electronic Club - UOM](#)
- [A Scout - Bushmanthong awarded](#)-(2010- Ongoing)
- [Member - Hiking club](#)
- [SLOMF Math Trainers in SLOMF](#) - (from January,2023)
- [Demonstrator in SLRC \(University of Moratuwa\)](#) - (from November,2022)
- [AIESECer\(IGVs\) in AIESEC \(University of Moratuwa\)](#) - (from May,2021)
- [Teacher in Sasnaka Sansada](#) - (from May,2021)

- Volunteer in [Mahajanjan Volunteers](#) & [Sirakukul](#) - (from Nov,2020)
- Cricket Player - (2012 - Ongoing)

## REFERENCES

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**Dorien Herremans, PhD,**  
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Lead, AMAAI (Audio, Music and AI Lab)  
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