Bimalka Piyaruwan Thalagala

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EDUCATION

• University of Moratuwa

Honours Degree of B.Sc. of Engineering (Electronic and Telecommunication) CGPA: 3.54/4.20; Second class upper division.

Moratuwa, Sri Lanka Grad: July 2023

• Royal College

Colombo, Sri Lanka

GCE Advanced Level Physical Science (Applied & Pure Mathematics, Physics, Chemistry) Grad: Dec 2017 Passed with $3 \text{As} / 421^{st}$ in country / z-score of 2.0185; Country-wide university entrance examination taken by 32,075 students in 2017.

■ Work/Professional Experience

• Paraqum Technologies(Pvt.) Ltd. Associate Electronics Engineer

Dehiwala, Sri Lanka July 2023 - Present

Working as an embedded software developer in Analog Inference (Santa Clara, California, United States) team of the Paraqum Technologies. Involved in building a world-changing line of AI inference accelerators using novel analog in-memory computing technology.

• UAV Research Laboratory

Moratuwa, Sri Lanka

Nov 2022 - July 2023

Development of a Field Robot With Autonomous Navigation Undergraduate final year project; Developed a generic field robot with autonomous navigation which can operate in a semi-structured, outdoor environment; focusing on: 1.) optimal fusion of LiDAR, Vision, IMU & RTK sensors for precise pose estimation, 2.) Robot Operating System based software stack.

• LE Robotics (Pvt.) Ltd.

Gampaha, Sri Lanka

Trainee Computer Vision & Electronic Engineer

Jan 2022 - July 2022

Undergraduate internship; Research and Development (R&D); Contributed to developing and/or upgrading algorithms, related software, and firmware of an industrial articulated robot arm that uses computer vision for real-time motion planning.

X SKILLS

- Data Analysis: Image Processing; Computer Vision; Deep Learning including CNNs, GNNs, Transformers * *Libraries*: TensorFlow; and GANs; Machine Learning including SVM, Linear & Logistic Regressions OpenCV; Matplotlib; NumPy; EmguCV
- Programming: C/C++; Python; Data Structures & Algorithms; OOP; Shell Scripting; Metaprogramming
- FPGA/ASIC Development: Xilinx Vivado; ModelSim; Cadence Genus & Innovus * HDLs: Verilog
- Other Tools: Visual Studio Code; Ubuntu; Git & GitHub; IATEX; Atlassian & Microsoft 365 Tools
- Spoken Languages: International English (professional working proficiency); Sinhala (native)

ACADEMIC PROJECTS

- Development of a Field Robot With Autonomous Navigation July 2023 - See Project Architected the Robot Operating system based software stack of a fully autonomous mobile robot which operates in semi-structured outdoor environments. Developed and/or modified the required software modules including a 3D LiDAR based SLAM algorithm, in modern C++.
- Code Compression & Decompression Engine simulator in C++ Oct 2022 See Project Designed the simulator for UOM's EN3240 Embedded Systems Engineering module from scratch. Optimized the code for time and space complexity, clarity, and reusability using OOP concepts, Data Structures and Algorithms, and Function Pointers in modern C++.
- FPGA based Custom Processor for Image Downsampling July 2022 - See Project Design and simulation of a custom image downsampling processor based on the RISC architecture for UOM's EN3030 Circuits and Systems Design module. Contributed to developing and verifying the High-Level algorithm in Python and manually compiled it to Assembly language using the custom Instruction Set Architecture (ISA).
- Detection & Tracking of Objects, moving on a Conveyor Belt July 2021 - See Project Tracked and counted moving hexagonal nuts on a conveyor belt in a video file using traditional computer vision. Used background subtraction, contour representation, template matching, and object moments interpretation for detection, modeling, and tracking; Implemented algorithms using OpenCV and NumPy libraries with Python.

□ Non-Academic Projects

- Object Detection Framework for a Pick & Place Machine June 2022 Internship Project Engineered framework can detect, classify, and determine the location and orientation of objects w.r.t a real world coordinate system for grasping. Implemented the algorithms using C++ and OpenCV, and documented guidelines for deploying the framework to the robot's vision subsystem.
- GUI Application to Train a SVM based Object Classifier April 2022 Internship Project Developed a Windows GUI software for training an object classification model that uses, SIFT for feature extraction; K-Means clustering to create the Bag of Words (BOW); and Support Vector Machines (SVMs) for classification in One-vs-All approach. Implemented required algorithms using C# and Emgu CV.
- GUI Application for Camera Calibration

 March 2022 Internship Project

 Developed a Windows GUI application for calibrating monocular cameras. The application can generate the

 necessary data to remove image distortions and accurately transform 2D image points to a 3D real-world

 coordinate system with an accuracy of ± 0.5 mm. Implemented the required algorithms using C# and Emgu CV.

Q AWARDS/ACHIEVEMENTS

• IEEEXtreme 15.0 - Ranked 64 in Sri Lanka out of 447 teams

Oct 2021

The 24-hour long global, algorithmic competitive programming challenge organized by IEEE

• Finalist - Arimac Futurecast Ideathon (Artificial Intelligence Category)

Organized by Arimac Lanka in collaboration with AIESEC Sri Lanka

• Sporting Colors - Taekwondo Champions in Sri Lanka University Games (SLUG 2019)

Awarded by University of Moratuwa, Sri Lanka

• EXED Royal Award - Recognition of the excellence in Advanced Level Examination in 2017

Awarded by Royal College Colombo, Sri Lanka

♣ Leadership/Volunteer Experience

- Resource Person "Pi Mora 2.2" Raspberry Pi Jam

 Conducted an in-person talk session & workshop on Computer Vision for undergraduates.

 Dec 2022
- Student Representative Dept. of Electronic and Telecom. Engineering

 Nov 2020 Aug 2022

 Held responsibilities related to academic and non-academic activities of the students from the 2018 batch.
- Sergeant at Arms Rotaract Club of University of Moratuwa, Sri Lanka

 Jun 2019 Jun 2020

 Held the responsibilities of maintaining order and dignity at club meetings and assisting with event management.
- Assistant event coordinator "Are You Ready? 2019"

 Assisted in hosting a series of on-site events at the 24th official carrier fair of the University of Moratuwa.
- Co-chairperson "Campfire 2019"

 The final episode of 'CAST 4', the signature project under the avenue of Club Services which was organized by the Rotaract Club of the University of Moratuwa, Sri Lanka.

PROFESSIONAL ASSOCIATIONS

- Institution of Engineers Sri Lanka (IESL)

 Student member; Membership Number: S-28028; Engineering Discipline: Electronic & Telecommunication
- Institute of Electrical and Electronics Engineers (IEEE)

 Student member; Membership number: 96669343; IEEE Region: R10 -Asia and Pacific; Section: Sri Lanka

♣ LICENSES & CERTIFICATIONS

C++ Concepts for Industrial Applications offered by Synopsys, Inc.
 GANs Specialization (Course 1 of 3) on Coursera
 Hardware Description Languages for FPGA Design on Coursera
 Introduction to Git and GitHub on Coursera
 Dec 2021 - See credential
 July 2020 - See credential
 June 2020 - See credential