

# BIMALKA PIYARUWAN THALAGALA

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## 🏛️ EDUCATION

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- **University of Moratuwa** Moratuwa, Sri Lanka  
*Honours Degree of B.Sc. of Engineering (Electronic and Telecommunication)* *Grad: July 2023*  
CGPA: 3.54/4.20; Second class upper division.
- **Royal College** Colombo, Sri Lanka  
*GCE Advanced Level Physical Science (Applied & Pure Mathematics, Physics, Chemistry)* *Grad: Dec 2017*  
Passed with 3As / 421<sup>st</sup> in country / z-score of 2.0185; Country-wide university entrance examination taken by 32,075 students in 2017.

## 📁 WORK/PROFESSIONAL EXPERIENCE

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- **Paraqum Technologies (Pvt.) Ltd.** Dehiwala, Sri Lanka  
*Electronics Engineer* *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  
*Development of a Field Robot With Autonomous Navigation* *Nov 2022 - July 2023*  
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.

## ✂️ SKILLS

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

## 🎓 ACADEMIC PROJECTS

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- **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

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- **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  $\pm 0.5$  mm. Implemented the required algorithms using **C#** and **Emgu CV**.

## AWARDS/ACHIEVEMENTS

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- **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) *April 2021*  
*Organized by Arimac Lanka in collaboration with AIESEC Sri Lanka*
- **Sporting Colors** - Taekwondo Champions in Sri Lanka University Games (SLUG 2019) *2019*  
*Awarded by University of Moratuwa, Sri Lanka*
- **EXED Royal Award** - Recognition of the excellence in Advanced Level Examination in 2017 *2018*  
*Awarded by Royal College Colombo, Sri Lanka*

## LEADERSHIP/VOLUNTEER EXPERIENCE

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- **Resource Person** - "ENTC Missing Semester" - Dept. of Electronic and Telecom. Engineering *Feb 2024*  
*Conducted an online session on professional developer tools to enhance computing ecosystem literacy of first and second year undergraduates of the dept.*
- **Resource Person** - "Pi Mora 2.2" Raspberry Pi Jam *Dec 2022*  
*Conducted an in-person talk session & workshop on Computer Vision for undergraduates.*
- **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" *Oct 2019*  
*Assisted in hosting a series of on-site events at the 24<sup>th</sup> official carrier fair of the University of Moratuwa.*
- **Co-chairperson** - "Campfire 2019" *April 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

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- **Institution of Engineers Sri Lanka (IESL)** *Jul 2021 - Present*  
*Associate Member; Membership Number: AM-31257; Engineering Discipline: Electronic & Telecommunication*
- **Institute of Electrical and Electronics Engineers (IEEE)** *Dec 2020 - Dec 2023*  
*Student member; Membership number: 96669343; IEEE Region: R10 -Asia and Pacific; Section: Sri Lanka*

## LICENSES & CERTIFICATIONS

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- **Google AI Essentials** on Coursera *June 2024 - See credential*
- **C++ Concepts for Industrial Applications** offered by Synopsys, Inc. *Dec 2021 - See credential*
- **GANs Specialization (Course 1 of 3)** on Coursera *Nov 2021 - See credential*
- **Hardware Description Languages for FPGA Design** on Coursera *July 2020 - See credential*
- **Introduction to Git and GitHub** on Coursera *June 2020 - See credential*

- Last updated on July 23, 2024; please check LinkedIn profile for the most up to date CV -