

Didula Dissanayaka

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EDUCATION

Master of Engineering in Computer Engineering
Memorial University of Newfoundland, St. John's, Canada

Jan 2020 - May 2022

- **GPA: 4.0/4.0**

B.Sc.Eng (Hons) in Electronic & Telecommunication Engineering
University of Moratuwa, Sri Lanka

Mar 2013 - Apr 2017

EXPERIENCE

Intelligent Systems Laboratory in collaboration with NRC Flight Research Laboratory, Canada
Research Assistant

Jan 2020 - May 2022

- Developed a novel visual, inertial and lidar sensor combined navigation and mapping software system for real-time UAV delivery application with 2x estimation accuracy compared to the state-of-the-art methods. (C++ in ROS framework with OpenCV and PCL libraries)
- Implemented a state-of-the-art real-time landing zone identification algorithm for autonomous UAVs in two days using MATLAB and converted it to Python.

University of Moratuwa, Sri Lanka
Research Assistant

Oct 2018 - Oct 2019

- Developed a software system for a self-Balancing and navigating an uneven terrain by arm maneuvers of a continuous track wheeled robot for disaster management and field robotics applications (C++, simulated in ROS/Gazebo).

University of Moratuwa, Sri Lanka
Lecturer

May 2017 - Oct 2018

- Lectured course: Basic Electronics (40+ hours, over 300 students)
- Conducted and administered courses: Machine Vision and Image Processing, Autonomous Systems, Robotics.

VEGA Technologies (Pvt) Ltd, Sri Lanka - VEGA electric supercar
Associate Electronic Engineer

Oct 2015 - April 2016

- Improved the Battery Management System (BMS) and connected it to the CAN bus of the car.
- Built circuits and integrated battery cells to develop the 60kWh, 495V battery pack of the car.
- Designed electronic circuits and implemented a 400A Hall effect current sensor module and temperature sensor circuit for the motor controller of the car. Additionally, tested and analyze the performance of vehicle's drive system.

SELECTED PROJECTS

- **Automated system for image based 3D rendering of artifacts:** Developed an autonomous end-to-end system to 3D reconstruct artifacts using 2D images and a mobile phone application to view 3D models (C++ with OpenCV library for the 3D reconstruction algorithm, Java for the GUI).
- **Underwater localization in autonomous underwater vehicles (AUV):** Implemented an underwater acoustics communication link and improved the relative localization algorithm between an underwater robot and a surface robot (C++).
- 3D Convolutional neural network for vegetation detection from images (TensorFlow).
- Autonomous grid solving robot: locate the best path, detect, fetch and place objects (Micro C).

- Developing micro-controller based intelligent agent to play Connect6 game.
- Photography identity placement using image processing techniques (MATLAB).
- Real-time edge detection in a video using an FPGA.

HONOURS & AWARDS

- **Manamperi Award** - Best research engineering project in Sri Lanka (1st place out of 60+ projects) *SLSA*, 2017
- **Mahapola Higher Education Merit Scholarship** *Government of Sri Lanka, 2013-2017*

SKILLS

- **Programming Skills:** C, C++, Python, Java, Micro C, OpenCV, OpenGL, CUDA, Verilog and VHDL
- **Technical Skills:** ROS, MATLAB, PyTorch, TensorFlow, SolidWorks, AutoCAD, 3ds Max, Eagle, Adobe Premiere Pro.

PUBLICATIONS

Didula Dissanayaka, Thumeera R. Wanasinghe, Oscar De Silva, Awantha Jayasiri, and George K.I. Mann, *Review of Navigation Methods and Implementation of GPS/VLOAM Solution for UAV-Based Parcel Delivery* submitted to IEEE Transactions on Automation Science and Engineering (2022).

Didula Dissanayaka, Oscar De Silva, Thumeera R. Wanasinghe, Awantha Jayasiri, and George K.I. Mann, *Numerical Study of GPS Aided Visual Lidar Odometry and Mapping (VLOAM) for Safety Regulatory Compliance*, IEEE Newfoundland Electrical and Computer Engineering Conference (2021).

Didula Dissanayaka, Chathurika Amarathunga, Amila Silva, Namasivayam Piranavaruban, Ranga Rodrigo and Chamira Edussooriya, *A Vision-Based Artifact Rendering System for Documentation and Visualization*, Journal On Computing and Cultural Heritage (2019).

PROFESSIONAL QUALIFICATIONS

- **Chartered Institute of Management Accounting** *Sep 2011*
CIMA Adv. Dip MA

EXTRA-CURRICULAR ACTIVITIES

- **President**, Sri Lankan Students Association of Memorial University *2020/2021*
- **Chairperson of "Drone Symposium 2017"**: The inaugural symposium on UAVs in Sri Lanka.
- **Vice President** International service, Rotaract club of University of Moratuwa *2015/2016*
- **Chairperson of "Are You Ready-2014"**: The official Careers fair of University of Moratuwa

Community Service

- Hand In Hand 2017: Helping the children suffering from Cancer together with a public awareness program
- Healing Hands 2015: A health camp for the rural village Pothuwatawana, Dankotuwa, Sri Lanka
- Gift a Smile (monthly project): Spending a day with special needs children
- More than hundred projects done by the Rotaract club of University of Moratuwa over three years

Sports

- Badminton and Tennis, University of Moratuwa
- Cricket: Under 13, Under 15 and Under 17 teams of Sanath Jayasuriya cricket club
- Baseball and Swimming, Nalanda College