

# NARMADA M. BALASOORIYA

[LinkedIn](#), [ResearchGate](#), [GitHub](#), [Google Scholar](#)

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## INTERESTS

· Deep Learning · Computer Vision  
· Autonomous Navigation · Robotics · Self-driving cars

## EDUCATION

*September 2020 - Present*

**Memorial University of Newfoundland**, St. John's, NL, Canada

M.Eng. in Computer Engineering (thesis-based)

GPA: 4.00/4.00

*May 2017 - December 2018*

**Postgraduate Institute of Science, University of Peradeniya**, Peradeniya, Sri Lanka

M.Sc. in Computer Science

GPA: 3.47/4.00

*May 2018 - present*

**Coursera - University of Toronto**

Certificate Course on Neural Networks for Machine Learning

*March 2013 - October 2016*

**University of Peradeniya**, Peradeniya, Sri Lanka

B. Sc. in Engineering specializing in Computer Engineering

***A summary of the modules followed:***

· Deep Learning and Reinforcement Learning · Aided Navigation Systems  
· Machine Learning for Mechanical Engineering · Advanced Computer Vision

· Artificial Neural Networks · Computer Vision  
· Artificial Intelligence · Data Mining and Machine Learning · Image Processing  
· Linear Algebra, Probability, Calculus, Differential Equations  
· Graph Theory · Numerical Methods · Discrete Mathematics

· Embedded Systems · Computer Architecture · Computer Engineering Systems · Electronics  
· Operating Systems · Computer Communication Networks · Software Engineering  
· Database Systems · Computer Graphics · Computer Security

## PUBLICATIONS

**2021 In-situ Sea Ice Detection using DeepLabv3 Semantic Segmentation**

*Authors: Narmada Balasooriya, Benjamin Dowden, Jesse Chen, Oscar De Silva, and Weimin Huang*

*Technical Session, OCEANS Conference and Exposition, 2021  
San Diego, USA - Porto, Portugal (Virtual Conference)*

**2020 Landing Zone Identification Using A Hardware-accelerated Deep Learning Module**

*Authors: Sachithra Atapattu, Narmada M. Balasooriya, Oscar De Silva, Awantha Jayasiri George Mann and Raymond Gosine*

*77th Annual Forum & Technology Display, The Vertical Flight Society, 2020  
(Virtual Conference)*

**2019 Visualizing the Consequences of Climate Change Using Cycle-Consistent Adversarial Networks**

*Authors: Sasha Luccioni\*, Victor Schmidt\*, Surya Karthik Mukkavili\*, Yoshua Bengio\*  
Kris Sankaran\*, Narmada Balasooriya and Jennifer Chayes\*\*  
(\*MILA, Canada, \*\*Microsoft Research)*

*Short Paper*

*International Conference in Representation Learning 2019 AI for Social Good Workshop, USA  
(paper - [click to view](#))*

## AI for mitigating effects of climate and weather changes in agriculture

Authors: Narmada Balasooriya, CD Athuraliya\*, Janak Gunatilleke\* (\*ConscientAI Labs)

Project Proposal

International Conference in Representation Learning 2019 AI for Social Good Workshop, USA  
([paper](#) - [click to view](#))

## 2018 ANALYTICAL TOOLS IN BUSINESS PRACTICE: Analysis of Online Customer Shipping Programs and Policies

Invited Paper, 49th Annual Meeting of the Decision Sciences Institute, 2018

Chicago, Illinois, USA

(Co-authored, to be presented in November, 2018)

## 2017 A Sophisticated Convolutional Neural Network Model for Brain Tumor Classification

Conference Proceedings, 12<sup>th</sup> IEEE International Conference on Industrial Information Systems 2017, SL

([paper](#) - [click to view](#))

## A Convolutional Neural Network Model for Brain Tumor Classification

Research Abstract accepted to 12<sup>th</sup> Women in Machine Learning Workshop 2017, USA

(Accepted for Poster Presentation)

## RESEARCH PROJECTS

March 2018 - September 2018

## ANALYTICAL TOOLS IN BUSINESS PRACTICE: Analysis of Online Customer Shipping Programs and Policies

Invited Paper at 49th Annual Meeting of the Decision Sciences Institute 2018, Chicago, USA

(Co-authored paper, Presentation to be held in November 2018)

### My Contribution

- Development of a **Python program** to extract specific certain information from Amazon product web pages
- Used **BeautifulSoup** python library along with other html libraries to extract data
- Codes are available at request

March 2018 - June 2018

## Kaggle - Google Landmark Retrieval Challenge

- Studied Supervised Convolutional Neural Network models like RESNET and YOLO
- Merged nearly one million train images with the size (128\*128\*3) into a single HDF5 file using PyTables and labeled them according to each image's unique ID
- Trained a **Denosing Autoencoder** with the provided training dataset using **Keras** and Tensorflow as backend
- Extracted the 50 most similar images using distance between features
  
- Codes are available in [GitHub](#)

December 2016 - May 2017

## A Sophisticated Convolutional Neural Network Model for Brain Tumor Classification

published in ICIIS 2017 in Sri Lanka, Abstract Accepted to WiML Workshop 2017 in U.S.A

- Developed a model using **Convolutional Neural Networks** to classify brain tumors
- MRI images of three tumor classes, one healthy class and one unknown tumor type were used for training and testing dataset.
- Model development is done using **TensorFlow**, **TFLearn**, **Scikit-learn**, GPU programming and **Python**.
- Codes are available in [GitHub](#)
- The research article is published in [IEEE Xplore](#)

March 2016 - October 2016

## Vision Based Obstacle Avoidance and Safety System For a Quadcopter

Undergraduate Final Year Project

- Developed a vision based autonomous obstacle avoidance system for a quadcopter.
- Feature points are detected and matched between consecutive images using **Python & OpenCV**.

- Visual Odometry** is used to estimate the distance to those features.
- The obstacles are determined by **clustering** the point cloud using **K-Means** algorithm.
- The relative location of those obstacles are determined using those clusters.
- The **optimum path** to avoid the obstacles are planned.
- The algorithm was implemented on a **Raspberry Pi 3 Model B**.
- The overall algorithm has a loop time **less than 100ms**.

**My contribution:**

- Development of feature extraction and matching algorithm using **C++**
- Reprogramming the firmware of the PX4Flow image sensor to obtain necessary data using **C**

**SKILLS**

*Programming* Python, MATLAB, C, Arduino, C++, Java  
*API* Keras, PyTorch, Scikit-Learn, Tensorflow, ROS(beginner), OpenCV, Docker, Git  
*Other* L<sup>A</sup>T<sub>E</sub>X, Linux, Google Compute Engine

**EXPERIENCE:**

**1-TEACHING**

*May 2021 - August 2021*

Teaching Assistant, Faculty of Engineering and Applied Science,  
 Memorial University of Newfoundland, Canada

**Courses :**

ME-7704: Mechanical Design Project 1

*December 2017 - December 2018*

Temporary Instructor, Department of Computer Engineering, Faculty of Engineering,  
 University of Peradeniya

**Courses :**

Embedded Systems, Digital Design(In-charge), Computer and Network Security(In-charge)

*December 2016 - December 2017*

Temporary Instructor, Computing Center, Faculty of Engineering,  
 University of Peradeniya

*July 2016 - October 2016*

Voluntary Instructor for Introduction to Computing course, Department of Computer Engineering,  
 Faculty of Engineering, University of Peradeniya

**2-WORK**

*2019-2020*

Visiting graduate student, Memorial University of Newfoundland, Canada

*March 2019 - August 2019*

Research Engineer, ConscientAI Labs, Sri Lanka (<https://conscient.ai>)

*Visualizing CLimate Change - MILA, Canada*

Independent Researcher (Volunteer)

January 2019 - March 2019

*Climate Change AI:How Can AI Help? - ICML 2019 Workshop*

Volunteer - Organizing Committee

(<https://www.climatechange.ai/events/icml2019>)

*Women in Machine Learning Workshop 2017 and 2018*

Peer-reviewed research articles

*October 2015 - March 2016*

Intern at IFS R&D International (Pvt) Ltd, Sri Lanka

- Developed a web application for the telephone directory at IFS
- Users can add, update and delete their telephone number and selected users have administrator privileges
- Developed using Java, GlassFish web server and Windows Server 2012

**ARTICLES**

**Houston, The Eagle Has Landed - About the Computer that took Man to the Moon**

Published in Annual GAUGE Magazine 2016 issue 4, pages 22-25

**Interview with Dr. Roshan Ragel**

Published in Annual GAUGE Magazine 2015 issue 3, pages 12-15

**The Most Famous Cipher Machine of All Time - "The Enigma"**

Published in GAUGE blog, Sep 2015

**How to become a Watch mender?**

Published in LinkedIn, on 6th Sep 2015

**SOFT SKILLS**

Writing, Photography

**REFEREES**

**Dr. Oscar De Silva**

Assistant Professor

Faculty of Engineering and Applied Science

Memorial University of Newfoundland

[oscar.desilva@mun.ca](mailto:oscar.desilva@mun.ca)

**Prof. Roshan Ragel**

Professor

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