

# MOHAMED AFHAM

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"A self-motivated individual equipped with strong fundamental knowledge and passionate in solving real-world problems with open source cutting edge research contributions in Computer Vision and Machine Learning."

## RESEARCH INTERESTS

- Computer Vision
- Machine Learning
- 3D Vision
- Self-Supervised Learning

## EDUCATION

**University of Moratuwa, Sri Lanka** Aug 2017 - Present (Expected Graduation: May 2022)  
**CGPA: 3.79** (First Class Honours)  
B.Sc (Hons) - Electronics and Telecommunication Engineering Dean's List: Semester 1,2,4,6  
**St. Joseph's College, Trincomalee, Sri Lanka** Grad: Aug 2016  
GCE Advanced Level Z - Score: 2.78  
High Distinctions for Combined Mathematics, Chemistry, Physics and General English  
District Rank : 2, National Rank : 11 (out of ~ 35, 000 candidates)

## EXPERIENCE

**Machine Vision Research Group, University of Moratuwa, Sri Lanka** Apr 2021 - Present  
*Undergraduate Thesis Research Student*  
*Advisor: Dr. Ranga Rodrigo*  
**Syntax Genie, Colombo, Sri Lanka** Feb 2022 - Present  
*Machine Learning Engineer - Part time*  
**VeracityAI, Colombo, Sri Lanka** Jun 2021 - Feb 2022  
*Associate Machine Learning Engineer - Part time*  
**MBZUAI, Abu Dhabi, UAE** Oct 2020 - Apr 2021  
*Research Assistant - Internship*  
*Advisor: Dr. Salman Khan*

## PUBLICATIONS / PREPRINTS

**Mohamed Afham, Isuru Dissanayake, Dinithi Dissanayake, Amaya Dharmasiri, Kanchana Thilakarathna and Ranga Rodrigo, CrossPoint: Self-Supervised Cross-Modal Contrastive Learning for 3D Point Cloud Understanding (CVPR 2022)**  
**Mohamed Afham, Udith Haputhanthri, Jathurshan Pradeepkumar, Mithunjha Anandakumar, Ashwin De Silva and Chamira Edussooriya, Towards Accurate Cross-Domain In-Bed Human Pose Estimation (ICASSP 2022)**  
**Mohamed Afham, Salman Khan, Muhammad Haris Khan, Muzammal Naseer and Fahad Shahbaz Khan, Rich Semantics Improve Few-Shot Learning (BMVC 2021)**  
Amaya Dharmasiri, Dinithi Dissanayake, **Mohamed Afham**, Isuru Dissanayake, Ranga Rodrigo and Kanchana Thilakarathna, **3DLatNav: Navigating generative latent spaces for semantic aware 3D object manipulation (submitted for review, 2022)**

## RESEARCH PROJECTS

**3D Point Cloud Understanding** May 2021 - Present  
*Final Year Thesis Project*

- Investigation on leveraging self-supervised, contrastive learning for better point cloud understanding.
- Developing a novel self-supervised architecture involving 3D-2D correspondence for a better 3D point cloud representation learning.
- Outcome: <https://arxiv.org/abs/2203.00680>

**In bed Human Pose Estimation** June 2021 - Oct 2021

- Research and experimentation with state-of-the-art methods for domain adaptation in in-bed pose estimation
- Implementing a cycle-GAN based data augmentation technique with knowledge distillation to perform in-bed pose estimation in unseen domain.
- Outcome: <https://arxiv.org/abs/2110.03578>

## Few-Shot Learning

Oct 2020 - June 2021

- Research and experimentation on state-of-the-art few-shot image classification methods
- Analysis on integrating natural language descriptions to improve few-shot image-classification
- Exploring the contribution of contrastive vision + language learning setting for few-shot image classification.
- Outcome: <https://arxiv.org/abs/2104.12709>

## SELECTED UNDERGRADUATE PROJECTS

<b>Few-Shot Image Classification using Memory Augmented Neural Networks</b> <i>Github Link, Blog Article</i>	2020
<b>Deep Neural Network for ECoG Handpose Detection</b>	2020
<b>Customer Churn Prediction</b>	2020
<b>COVID-19 patients detection in crowd using cough samples</b> <i>Github Link</i>	2020
<b>Twitter Sentiment Analysis</b> <i>Github Link, Blog Article</i>	2019
<b>American Sign Language Gestures Classification</b> <i>Github Link</i>	2019

## SELECTED AWARDS / HACKATHONS

<b>SPS Travel Grant</b> - IEEE Signal Processing Society	2022
<b>2nd Runner Up</b> - Video and Image Processing Cup, IEEE ICIP, Alaska, USA (Virtual)	2021
<b>IEEE SMC Winners</b> - BR41N.io hackathon, IEEE SMC Conference, Toronto	2020
<b>Runner Up</b> - DataStorm v1.0, Organized by Rotaract Club of University of Moratuwa	2020
<b>Ranked 191<sup>st</sup> in the world</b> - IEEEExtreme 13.0	2019
<b>Champions</b> - Intellihack v1.0, Organized by University of Colombo School of Computing	2019
<b>Bronze Medalist</b> - International Mathematics Competition for University Students, Blagoevgrad, Bulgaria	2018
<b>Participant</b> - Asian Physics Olympiad, Yakutsk, Russia	2017
<b>Honorable Mention</b> - International Mathematics Olympiad (IMO), Chiang Mai, Thailand	2015
<b>Merit Award</b> - International Mathematics Competition, Daejeon, Korea	2014
<b>Gold Medalist</b> - Sri Lanka Physics Olympiad	2016

## RELEVANT COURSEWORKS

**Computer Vision:** EN2550 Fundamentals of Image Processing and Machine Vision (**A**), EN4553 Machine Vision (Ongoing), EN4583 Advances in Machine Vision (Ongoing)

**Mathematics:** MA2023 Calculus (**A+**), MA 2033 Linear Algebra (**A+**), MA4043 Neural Network and Fuzzy Logic (Ongoing), MA4033 Time Series and Stochastic Processes (Ongoing)

**Miscellaneous:** EN1060 Signals and Systems (**A**), EN2570 Digital Signal Processing (**A**), CS2022 Data Structures and Algorithms (**A-**), EN2040 Random Signals and Processes (**A-**)

## SKILLS

<b>Languages:</b> Python, MATLAB	<b>Cloud Computing:</b> AWS (EC2, S3), Microsoft Azure (VM)
<b>Frameworks:</b> PyTorch, Tensorflow, Keras	<b>Utilities:</b> PyCharm, VSCode, Git

## VOLUNTEERING AND PROFESSIONAL SERVICES

<b>Invited Reviewer</b> <ul style="list-style-type: none"><li>• CVPR 2022 (h5-index: 356)</li><li>• IROS 2022 (h5-index: 73)</li><li>• ECCV 2022 (h5-index: 197)</li><li>• IET Computer Vision (IF: 0.38)</li></ul>	2021 - 2022
<b>Student Representative</b> <ul style="list-style-type: none"><li>• Department of Electronic and Telecommunication Engineering, Batch of 2017</li></ul>	2021 - 2022
<b>Overall Coordinator</b> - Career Fair organized by Electronic Club, University of Moratuwa	2022
<b>Global Volunteer</b> - AIESEC in Hungary	2019
<b>President</b> - Majlis-UI-Islam, University of Moratuwa	2021
<b>Participant</b> - Sakura Science Exchange Program in Science, Japan	2017