

# Sri Mihir Devapi Ungarala


## Research Assistant, Robotics Research Center

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### Education

August 2019	<b>Birla Institute of Technology and Science (BITS) Pilani</b>	Hyderabad, India
August 2023	B.E. Electronics and Communications Engineering (ECE) - CGPA: 8.2/10	

### Research Experience

Present	<b>IIIT Hyderabad   Robotics Research Center</b> 	Hyderabad, India
June 2023	<i>Research Assistant</i> Working on creating an Object Detection/ Segmentation pipeline that can work even in Adverse Weather Conditions.  Working on Deep learning-based path planning algorithm for Drones.	
January 2023	<i>Research Intern (Bachelor Thesis)</i>   Advisors: <a href="#">Dr. K Madhava Krishna</a> , <a href="#">Dr. Joyjit Mukherjee</a> Worked on creating a Multi-agent SLAM pipeline.	

### Technical Skills

- > Python, C++, C, MATLAB
- > Pytorch, Tensorflow, ROS
- > Arduino, RaspberryPi

### Publications

- [S.1] **DiffPrompter: Differentiable Implicit Visual Prompts for Semantic-Segmentation in Adverse Condition**  
Sanket Kalwar\*, [Mihir Ungarala\\*](#), Shruti Jain\*, Aaron Monis, Krishna Reddy Konda, Sourav Garg, K Madhava Krishna  
[Submitted to ICRA 2024]

### Select Research Projects

**Differentiable Implicit Visual Prompts for Semantic-Segmentation in Adverse Condition**   August'23 - September'23  
Advisors: [Dr K. Madhava Krishna](#), [Dr Sourav Garg](#)

- > Analyzed how Visual Prompts can be used for better generalization in adverse weather conditions.
- > Experimented on different variations of architecture for improvement in performance and generalization in out-of-distribution scenarios.
- > [Link](#) to project website

**Semantic Segmentation using Segment Anything Model(SAM)**   June'23 - August'23  
Advisors: [Dr K. Madhava Krishna](#), [Dr Sourav Garg](#)

- > Worked extensively on SAM's embedding space
- > Worked on using semantic property in SAM's embeddings to do semantic classification without incorporating any learning methods
- > [Link](#) to few of the results

**Distributed/Multi-Agent SLAM**   January'23 - June'23  
Advisor: [Dr K. Madhava Krishna](#), [Dr Joyjit Mukherjee](#)

- > Conducted a thorough literature study to understand different SLAM as well as Multi-agent SLAM algorithms to understand the key differences between them and, the limitations, novelty, and scope of each algorithm.
- > Worked primarily on inter-robot and intra-robot loop closures and worked on pose-graph optimization.
- > This work is part of DRDO funded project
- > [Link](#) for Thesis Report

## Course Projects

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### Face Retrival

*BITS F441: Sel Topics from CS - Computer Vision*

- › The idea of the project is to create an image retrieval pipeline based on faces which is inspired by a feature of Google Photos.
- › Implemented a Siamese network-based face recognition network that acts as a binary classifier saying whether query and target images are the same or not which is different from the general, Euclidean distance-based approach.

### Image colorization

*BITS F312: Neural Networks and Fuzzy Logic*

- › Used Convolutional Auto-encoders for colorizing grayscale
- › Instead of directly predicting in RGB color-space, predictions are done in Lab color-space i.e., given the L-channel of a grayscale image, predicting a,b channels of RGB image as the L channel of RGB image and the grayscale image is the same.

## Relevant Courses and certificates

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- › **BITS F312: Neural Networks and Fuzzy Logic:** Grade(Letter grade/10 scale): A-/9
- › **BITS F464: Machine Learning:** Grade(Letter grade/10 scale): A-/9
- › **BITS F441: Sel Topics from CS - Computer Vision:** Grade(Letter grade/10 scale): B/8
- › **Deep Learning Specialization in Coursera by Andrew Ng:** [Certificate Link](#)