Srikanth **Malla**

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Research Interest

My passion is the quest for understanding and modeling visual intelligence in humans, particularly in applications involving behavior understanding, navigation, and reasoning. The research problems that I would like to pursue include learning with limited data, generalizing concepts across different domains, and learning data representations without labels through unsupervised or weakly supervised methods. I would like to apply solutions to these problems in different domains, including intelligent mobility and robotics.

Education

Worcester Polytechnic Institute *Worcester, Massachusetts, USA*

M.Sc. Robotics Engineering, GPA: 4.0/4.0 *Jan 2017 - Aug 2018*

- **Honda Research Institute**, SanJose, CA — *Research Internship Program Spring, Summer 2018*

Vellore Institute of Technology *Vellore, India*

B.Tech. in Electronics and Instrumentation, GPA: 8.79/10 *July 2012 - May 2016*

- **Carnegie Mellon University**, Pittsburgh, PA — *Semester Abroad Fall 2015, Spring 2016*

Research Experience

Kinetic Automation *Palo Alto, California, USA*

Research Engineer *Oct 2021 -*

Developing 3D Machine Vision algorithms for Autonomous Driving and Electric Vehicles maintenance. Responsible for simulation, data creation, algorithm design, and deployment.

Honda Research Institute *San Jose, California, USA*

Research Engineer *Jan 2018-Oct 2021*

Worked on 3D scene understanding research topics like 3D Mapping using LiDAR sensor, sensor fusion with GPS-IMU sensors, 3D detection, joint 2D-3D multiobject tracking, action recognition, future trajectory forecast.

Carnegie Mellon University *Pittsburgh, Pennsylvania, USA*

Visiting Scholar, Machine Learning Department *May 17-Aug 17*

Under the supervision of Katerina Fragkiadaki, worked on developing Ego-motion estimation for UAVs with low cost sensors (Monocular Camera, IMU) using Deep Learning Techniques. IMU sensor is used to overcome the problem of less or no visual correspondences during fast motion.

Pittsburgh, Pennsylvania, USA

Research Associate, Field Robotics Center *Sept 15-April 16*

Under the supervision of Sebastian Scherer, for the application of Industrial inspection with UAVs, I worked on system integration, control and real-time coverage planner to optimize flight time.

Publications

Social-STAGE: Spatio-Temporal Multi-Modal Future Trajectory Forecast *ICRA*

International Conference on Robotics and Automation *2021*

https://arxiv.org/pdf/2011.04853.pdf

S Malla, B Dariush and C Choi

RAIN: Reinforced hybrid attention inference network for motion forecasting — *ICCV*

International Conference on Computer Vision — *2021*

https://arxiv.org/pdf/2108.01316.pdf

J Li, F Yang, H Ma, S Malla, M Tomizuka and C Choi

LOKI: Long Term and Key Intentions for Trajectory Prediction — *ICCV*

International Conference on Computer Vision — *2021*

https://arxiv.org/pdf/2108.08236.pdf

H Girase*, H Gang*, S Malla, J Li, A Kanehara, K Mangalam, C Choi

Shared Cross-Modal Trajectory Prediction for Autonomous Driving — *CVPR "ORAL"*

Computer Vision and Pattern Recognition — *2021*

https://arxiv.org/pdf/2011.08436.pdf

C Choi, J H Choi, J Li, S Malla

Bird's Eye View Segmentation Using Lifted 2D Semantic Features — *BMVC*

British Machine Vision Conference — *2021*

to appear

I Dwivedi, S Malla, YT Chen, B Dariush

DROGON: A Trajectory Prediction Model based on Intention-Conditioned Behavior Reasoning — *CoRL*

Conference on Robot Learning — *2020*

https://arxiv.org/pdf/1908.00024.pdf

C Choi, S Malla, A Patil, J H Choi

TITAN: Future Forecast using Action Priors — *CVPR "ORAL"*

Computer Vision and Pattern Recognition — *2020*

https://arxiv.org/pdf/2003.13886.pdf

S Malla, B Dariush and C Choi

SSP: Single Shot Future Trajectory Prediction — *IROS*

International Conference on Intelligent Robots and Systems — *2020*

https://arxiv.org/pdf/2004.05846.pdf

I Dwivedi, S Malla, B Dariush, C Choi

The H3D Dataset for Full-Surround 3D Multi-Object Detection and Tracking in Crowded Urban Scenes — *ICRA*

International Conference on Robotics and Automation — *2019*

https://arxiv.org/pdf/1903.01568.pdf

A Patil, S Malla, H Gang, Y T Chen

Development of an intelligent pressure measuring technique for bellows using radial basis function neural network — *Elsevier*

Sensors and Actuators A: Physical — *2016*

https://www.sciencedirect.com/science/article/abs/pii/S0924424715302697

V Naveen, V Komanapalli, and S Malla

Gesture Control Interface Using Machine Learning Algorithms — *IJARCSSE*

IJARCSSE Volume 5, Issue. 09 (2015) ISSN: 2277-128X. — *2015*

https://www.researchgate.net/publication/291559092_Gesture_Control_Interface_Using_Machine_Learning_Algorithms

H S Baweja, T Parhar, S Malla

NEMO: Future Object Localization Using Noisy Ego Priors — *Arxiv*

2019

https://arxiv.org/pdf/1909.08150.pdf

S Malla, I Dwivedi, B Dariush, C Choi

Papers under review

DRAMA: Joint Risk Localization and Language Reasoning in Driving *CVPR*
Submitted for Computer Vision and Pattern Recognition *2022*
S Malla, J H Choi, C Choi, I Dwivedi, and J Li

Trajectory Prediction by Encoding Multi-ScaleHuman Interactions from Agent-Augmented Environment *CVPR*
Submitted for Computer Vision and Pattern Recognition *2022*
C Choi*, D Lee*,S Malla, S Bae, and J Kim

Patents

System and method for future forecasting using action priors *ACCEPTED*
US Patent App. 16/913,260 *2021*
Srikanth Malla, Chiho Choi, Behzad Dariush

Systems and methods for providing future object localization *ACCEPTED*
US Patent App. 16/828,343 *2021*
Srikanth Malla, Chiho Choi

Composite field based single shot prediction *ACCEPTED*
US Patent App. 16/917,864 *2021*
Isht Dwivedi, Chiho Choi, Srikanth Malla, Behzad Dariush

System and method for completing Joint Risk Localization and Reasoning in Driving *FILED*
US Patent App. 17/388256 *2021*
Srikanth Malla

System and method for automated extrinsic calibration of Lidars, Cameras, Radars, and Ultrasonic Sensors on Vehicles and Robots *FILED*
Provisional Filed *2021*
Nikhil Naikal, Alexander Marques, Srikanth Malla

SYSTEM AND METHOD FOR PROVIDING SOCIAL-STAGE SPATIO-TEMPORAL MULTI-MODAL FUTURE FORECASTING *FILED*
US Patent App.17/160747 *2021*
Srikanth Malla, Chiho Choi, Behzad Dariush

SYSTEM AND METHOD FOR COMPLETING TRAJECTORY PREDICTION FROM AGENT-AUGMENTED ENVIRONMENTS *FILED*
US Patent App. 17/161136 *2021*
Chiho Choi, Srikanth Malla, Sangjae Bae

SYSTEM AND METHOD FOR PROVIDING LONG TERM AND KEY INTENTIONS FOR TRAJECTORY PREDICTION *FILED*
US Patent App. 17/352540 *2021*
Harshayu Vishwajeet Girase, Haiming Gang,Srikanth Malla, Jiachen Li, Akira Kanehara, Chiho Choi

Technical Skills

Programming Python, C++, Matlab
ML Frameworks PyTorch, TensorFlow, Keras, CUDA
Vision Libraries PCL, OpenCV
Robotics Frameworks OpenRave, , Multisim, ROS, Solid Works, MoveIt, Gazebo, MuJoCo
Robots: Baxter, UAVs (custom built, DJI), Kuka Youbot, Turtle Bot
Others Linux, Docker, Vim, IPythonNotebook, Google Colab, Git, Github, AWS S3, AWS EC2, LaTeX

Editorial Service

2022	**CVPR**, Computer Vision and Pattern Recognition	*Reviewer*
2022	**RAL**, Robotics and Automation Letters	*Reviewer*
2021	**ICCV**, International Conference on Computer Vision (MAIR2 Workshop)	*Reviewer*
2021-22	**ICRA**, International Conference on Robotics and Automation	*Reviewer*
2020	**IROS**, International Conference on Intelligent Robots and Systems	*Reviewer*
2020	**IJRR**, International Journal of Robotics Research	*Reviewer*
2020	**T-IV**, Transactions on Intelligent Vehicles	*Reviewer*

Teaching

Worcester Polytechnic Institute *Tutor*

Electrical and Computer Engineering Design, ECE 2799 *Spring 2017*

In Spring 2017, I was the tutor for the course ECE 2799. Half of the course is project based and I supervised the electronics projects.

Teaching Assistant

Synergy of Human and Robotic Systems, RBE 595 *Fall 2017*

In Fall 2017 I was the Teaching Assistant for the course RBE 595, which is an advanced course designed for project-based robot design. I was part of grading the students assignments and tests. And help the students with questions in the class.