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, prediction, 3D scene modeling, 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, 3D modeling, 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

Samsung Semiconductor *San Jose, California, USA*

Staff Machine Learning Engineer *Feb 23-Present*

Working closely with teams that develop AI inference accelerators, also perform research and algorithm development for efficient AI inference. Develop and deploy full stack solutions for Retrieval Augmented Generation based inference tool for internal corporate data.

Kinetic Automation *Mountain View, California, USA*

Staff Research Engineer - Machine Learning *Mar 22-Feb 23*

Responsible for Machine learning related tasks simulation, data creation, algorithm design, and deployment.

Research Engineer *Oct 21-Feb 22*

Developing 3D Machine Vision algorithms for Autonomous Driving and Electric Vehicles maintenance.

Honda Research Institute *San Jose, California, USA*

Research Engineer *Aug 18-Oct 21*

Worked on 3D detection using LiDAR, camera sensors and Joint 2D-3D Multi Object Tracking, action recognition, future trajectory forecast research topics. Sub-research topics include interaction modelling and important agent identification.

Research Intern *Jan 18-July 18*

Worked on 3D scene understanding research topics like 3D Mapping using LiDAR sensor and sensor fusion with GPS-IMU sensors

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.

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

COPAL: Continual Pruning in Large Language Generative Models — *ICML* — *2024*

Accepted to International Conference on Machine Learning

https://arxiv.org/pdf/2405.02347

S Malla, J H Choi, C Choi

DRAMA: Joint Risk Localization and Captioning in Driving — *WACV* — *2023*

Winter Conference on Applications of Computer Vision

https://openaccess.thecvf.com/content/WACV2023/papers/Malla_DRAMA_Joint_Risk_Localization_and_Captioning_in_Driving_WACV_2023_paper.pdf

S Malla, C Choi, I Dwivedi, J H Choi and J Li

NEMO: Future Object Localization Using Noisy Ego Priors — *ITSC* — *2022*

International Conference on Intelligent Transportation Systems

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

S Malla, I Dwivedi, B Dariush, C Choi

Social-STAGE: Spatio-Temporal Multi-Modal Future Trajectory Forecast — *ICRA* — *2021*

International Conference on Robotics and Automation

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

S Malla, B Dariush and C Choi

RAIN: Reinforced hybrid attention inference network for motion forecasting — *ICCV* — *2021*

International Conference on Computer Vision

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* — *2021*

International Conference on Computer Vision

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"* — *2021*

Computer Vision and Pattern Recognition

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* — *2021*

British Machine Vision Conference

https://www.bmvc2021-virtualconference.com/assets/papers/0772.pdf

I Dwivedi, S Malla, YT Chen, B Dariush

DROGON: A Trajectory Prediction Model based on Intention-Conditioned Behavior Reasoning — *CoRL* — *2020*

Conference on Robot Learning

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

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

TITAN: Future Forecast using Action Priors — *CVPR "ORAL"* — *2020*

Computer Vision and Pattern Recognition

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

S Malla, B Dariush and C Choi

SSP: Single Shot Future Trajectory Prediction — *IROS* — *2020*

International Conference on Intelligent Robots and Systems

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

Papers under review

DEXTER: Dynamic Early-Exit for Transformer for Efficient Resources *Neurips*

Submitted to Neural Information Processing Systems *2024*

S Yoo, C Choi, S Malla, R Mahapatra, SJ Kim, W Lu, JH Choi

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 providing social-stage spatio-temporal multi-modal future forecasting *ACCEPTED*

US Patent App.17/160,747 *2021*

Srikanth Malla, Chiho Choi, Behzad Dariush

System and method for completing trajectory prediction from agent-augmented environments *ACCEPTED*

US Patent App. 17/161,136 *2022*

Chiho Choi, Srikanth Malla, Sangjae Bae

System and method for providing long term and key intentions for trajectory prediction *ACCEPTED*

US Patent App. 17/352,540 *2022*

Harshayu Vishwajeet Girase, Haiming Gang, Srikanth Malla, Jiachen Li, Akira Kanehara, Chiho Choi

System and method for completing Joint Risk Localization and Reasoning in Driving *FILED*

US Patent App. 17/388,256 *2022*

Srikanth Malla

System and method for automated extrinsic calibration of Lidars, Cameras, Radars, and Ultrasonic Sensors on Vehicles and Robots *FILED*

Provisional Filed *2022*

Nikhil Naikal, Alexander Marques, Srikanth Malla

Technical Skills

Programming Python, C++, Matlab
ML Frameworks PyTorch, Triton (openai), TensorFlow, Keras, Text Generation Inference
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

Professional Service

2022,24	**ECCV**, European Conference on Computer Vision	*Reviewer*
2022-24	**CVPR**, Computer Vision and Pattern Recognition	*Reviewer*
2023	**WACV**, Winter Conference on Applications of Computer Vision	*Reviewer*
2022	**SNSF**, Swiss National Science Foundation, Grant	*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.

Honors and Awards

Ministry of Human Resource and Development, India

Merit Scholarship *2013, 2014*

Study Abroad Scholarship, India

Videshi Vidya Devena, Andhra Pradesh State Sponsored Scholarship *2017*

Media Coverage

LOKI: An intention data set to train models for pedestrian and vehicle trajectory prediction

Tech Xplore

https://techxplore.com/news/2021-09-loki-intention-dataset-pedestrian-vehicle.html

September 9, 2021