

VISWESH NAGASWAMY RAJESH

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EDUCATION

University of California San Diego

Sep 2024 - May 2026

Master of Science in Electrical and Computer Engineering (Intelligent Systems, Robotics & Control)

Coursework: Stastical Learning*, Linear Systems Theory*, Large Model Reasoning*

Indian Institute of Technology Kharagpur

Dec 2020 - May 2024

Bachelor of Technology in Electrical Engineering

GPA: 8.68/10 (top 10%)

Coursework: Reinforcement Learning, Deep Learning, AI, Digital Signal Processing, Control Systems

Achievements: Winner, Inter IIT Tech Meet 12.0 | MITACS '23 | DAAD '23 (offered) | IITKGPf '22

EXPERIENCE

Toronto Intelligent Systems Lab

University of Toronto

Guide: [Prof. Igor Gilitschenski](#)

May 2023 – Apr 2024

- Developed a novel **latent space optimization**[1] method for dynamics estimation of UGVs in unforeseen environments
- Improved offline training with a novel **sliding-window loss function** to improve over LSTM-RNN baselines by **18.4%**

Mechanical Systems Control Lab

UC Berkeley

Guide: [Prof. Masayoshi Tomizuka](#)

Dec 2022 – Jun 2023

- Proposed the **Influence Index**, a scalar metric to quantify interaction levels between two-agents in Multi-Agent games
- Implemented **Population Play** and **Fictious Co-Play** to obtain rewards of **124** on the meltingpot cooking tasks

Stochastic Robotics Lab

IISc Bangalore

Guide: [Prof. Shishir Kolathaya](#)

May 2022 – Oct 2022

- Benchmarked the **Soft Actor Critic** algorithm on Stochlite quadruped in Isaac Gym to achieve a reward of over **350**
- Explored gradient-free methods such as the **Augmented Random Search** for end-foot trajectory splines generation

Autonomous Ground Vehicle Research Group

IIT Kharagpur

Undergraduate Researcher | [\[Certificate\]](#) | [Prof. Debashish Chakravarty](#)

May 2021 – Apr 2024

- Served as the **Deep Learning Team Lead** and collaborated on [URC 2022](#), [IAC 2022](#) and [MLRC 2022](#) with the group
- Inducted the freshman team and conducted reading groups on Reinforcement Learning, Computer Vision and Robotics

PUBLICATIONS

[1] "Adapting to Shifts in Vehicle Dynamics with Online Latent Optimization" [Under Review]

K Chinniah, A Ivanovic, J Lim, **Viswesh N** et al.

Conference on Robot Learning (CoRL) 2024

[2] "Entity Augmentation for Efficient Classification of Vertically Partitioned Data with Limited Overlap" [Link](#)

A Amalanshu*, **Viswesh N*** et. al

GLOW Workshop, IJCAI 2024

[3] "[RE] From Goals, Waypoints & Paths To Long Term Human Trajectory Forecasting" [Link](#)

A Shukala*, S Roy*, Y Chawla*, .. **Viswesh N*** et al.

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ACADEMIC PROJECTS

Entity Augmentation for Vertical Federated Learning

Dec 2023 – May 2024

- Developed **Entity Augmentation**[2] for VFL to improve accuracy on CIFAR-10 dataset by **21%** with **5%** data overlap
- Benchmarked the method on the Caltech-7, Handwritten and Parkinsons datasets, achieving a test accuracy of **90-95%**

Adobe Behavior Simulation Challenge | [\[Github\]](#) [\[Paper\]](#)

Oct 2023 - Dec 2023

- Explored finetuning LLaVA-1.5, LLaMA-2, and NExT-GPT LLMs using Keyword Retrieval and Bandit for routing
- Proposed a transformer-MLP based framework to leverage BLIP-2 embeddings and BERT tokens for predicting likes

Reinforcement Learning for Bipedal Walking | [\[Presentation\]](#) [\[Paper\]](#) [\[Video\]](#)

Aug 2022 – Oct 2022

- Implemented the **Proximal Policy Optimization (PPO)** algorithm on the BipedalWalker-v2 env on OpenAI Gym
- Performed reward shaping and implemented **Generalized Advantage Estimation (GAE)** to achieve a reward of **386**

Machine Learning Reproducibility Challenge 2022 | [\[Github\]](#)

Aug 2022 – Oct 2022

- Reproduced the results of a paper based on Y Net[3], a class-segmentation pipeline for long term human path prediction
- Proposed a transfer learning experiment to improve over SOTA benchmarks on ETH/UCY and SDD datasets by **15%**

Localization and Mapping of an Autonomous Racing Car | [\[Github\]](#)

Aug 2021 - Aug 2021

- Used PointCloud and Odometry data from CARLA Simulator and constructed global racing map using Open3D
- Implemented loosely coupled **ICP** to localize the vehicle resulting in an improvement of **20cm** over Odometry data

TECHNICAL SKILLS

Languages: C, C++, Python, MATLAB | **Frameworks:** Git, ROS/ROS2, RViz | **Simulation:** Gazebo, Gym, Meltingpot

Libraries: PyTorch, Numpy, Pandas, TensorFlow, OpenCV, matplotlib, PCL, wandb, Stable-Baselines, Ray RLLib