

VIRAJ PARIMI

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EDUCATION

- Carnegie Mellon University - School of Computer Science** Pittsburgh, PA
Master of Science in Robotics | GPA: 4.08/4 August 2021
Selected Coursework: Computer Vision, Mathematical Fundamentals for Robotics, Graduate Artificial Intelligence, Statistical Techniques in Robotics, Planning and Decision Making in Robotics, Mechanics of Manipulation
- Indraprastha Institute of Information Technology** Delhi, India
Bachelor of Technology in Computer Science and Engineering (Honors) | GPA: 8.96/10 May 2019
Relevant Coursework: Statistical Machine Learning, Deep Learning, Advanced Operating Systems, Graph Theory, Numerical Methods, Computer Graphics, Natural Language Processing, Network and Systems Security, Parallel Programming

EXPERIENCE

- NASA HOME STRI** Pittsburgh, PA
Research Assistant August 2019 - Present
- Developing a robust reactive planner by leveraging timeline-based planning framework and deploying it in a test-bed designed to mimic deep space habitats.
 - Formulating a tight integration of multi-robot coordination with humans for joint task execution.
- Carnegie Mellon University** Pittsburgh, PA
Research Scholar June 2018 - August 2018
- Developed a computationally scalable bayesian sequential learning framework for time-series forecasting with up to **4 orders of magnitude speed improvement** compared to other benchmarks.
- Precog** Delhi, India
Data Analytic Intern May 2017 - September 2017
- Devised data analytic tool for National Bomb Data Center (NBDC) working under National Security Guards (NSG) to generate analysis based on historic data.
 - Assembled tool that automates whole process from input stage to output stage where useful insights are passed upon user request.

PUBLICATIONS

- A Computationally Scalable Bayesian Sequential Learning Framework for Time-Series Forecasting** Working Paper
V. Parimi, I. Isukapati, S. Smith 2021
- Hierarchical Bayesian Framework for Bus Dwell Time Prediction** 2020
I. Isukapati, C. Igoe, E. Bronstein V. Parimi, S. Smith
IEEE Transactions on Intelligent Transportation Systems
- Understanding Vulnerability of Communities in Complex Networks** 2019
V. Parimi, A. Pal, S. Ruj, P. Kumaraguru, T. Chakraborty
Arxiv pre-print
- Analysis of DSRC accuracy for pedestrian localization** 2018
A. Lakshman*, V. Parimi*, S. Smith
RISS 2018 Working Paper Journal

SELECTED PROJECTS

Sampling-based Planning in Discrete Space

Carnegie Mellon University | November 2020

[Prof. Maxim Likhachev](#)

- Proposed a hierarchical decomposition algorithm where we discretize the continuous sample space of PRM/RRT algorithms in order to provide tighter completeness guarantees.
- Demonstrated the performance improvement of the proposed approach for 6-link robotic arm.

Lossy Compression using Neural Networks

Carnegie Mellon University | May 2020

[Prof. Zico Kolter](#)

- Formulated quantization techniques to generate discrete latent space representations among image and text based autoencoder models without significant performance implications.
- Showcased that incorporating commit-loss to the learning process improved the compression ratio of both image and text based models while maintaining the quality of reconstructions.

COTTON

IIIT-Delhi | November 2018

[Prof. Vivek Kumar](#)

- Developed a light-weight work-stealing runtime for async-finish task parallelism which was energy efficient without incurring significant impact on the performance.
- Used different power saving drivers in combination with `cpufreq` to change the CPU frequency based on some task based heuristics.

Understanding Vulnerability of Communities in Complex Networks

IIIT-Delhi | May 2018

[Prof. Tanmoy Chakraborty](#) & [Prof. Ponnurangam Kumaraguru](#)

- Identified vulnerable nodes in communities defined in a complex network by investigating several global and community centric properties to observe their effects on underlying community structure of the network.
- Proposed a hierarchical greedy heuristic based approach with a novel task based extrinsic evaluation strategy to measure its robustness.

Autoencoder based Recommender System

IIIT-Delhi | November 2017

[Prof. Angshul Majumdar](#)

- Engineered a new recommender system for GitHub where users are suggested with relevant repositories to contribute towards based on profiles while leading a group of 2.
- Applied similar technique to single-celled RNA-seq data and showed better gene expression recovery compared to other alternatives.

Advanced Application for Social Media Analytics (AASMA).

IIIT-Delhi | November 2016

[Prof. Ponnurangam Kumaraguru](#)

- Collaborated with a team of 7 people to extend a tool launched by CERC Lab by incorporating sentiment model along with improvements in efficient data handling and depiction using redis queue for real-time utilization by more than 75 agencies.

Smart Glasses

IIIT-Delhi | April 2015

[Prof. Alexander Fell](#)

- Created a prototype to help blind people understand text and allow them to identify people they know.
- Selected as top 10 projects of the year and was showcased at the Delhi Mini-Maker Faire.

HONORS

Full scholarship from advisors at Carnegie Mellon University	2020
Robotics Institute Summer Scholar (35 selected from ~ 800 applicants)	2018
FICCI Scholarship, Carnegie Mellon University	2018
GSoC Internship	2018
Dean's List, IIIT-Delhi	2017
Secured 99.7 th percentile among 1.5 million students in JEE Mains Examination	2015

ACTIVITIES

Graduate Research Assistant Intelligent Coordination and Logistics Laboratory - CMU Research Group	August 2019 - Present
RISS Admissions Committee Carnegie Mellon University	January 2020 - March 2020
Undergraduate Researcher Laboratory for Computational Social Systems - IIIT-Delhi Research Group	August 2017 - May 2019
Undergraduate Researcher Precog - IIIT-Delhi Research Group	August 2016 - May 2019
Teaching Assistant Advanced Programming	August 2017

INVITED TALKS

Planning under Uncertainty for Joint-Task Execution NASA HOME STRI	October 2020 Pittsburgh, PA
Computationally Scalable Bayesian Inference Framework Rapid Flow Technologies	June 2020 Pittsburgh, PA
Analysis of DSRC accuracy for pedestrian localization Hi-tech Robotics Systemz Ltd.	October 2018 Delhi, India

SKILLS

Programming Languages	Python, C, C++, Java
Tools and Technologies	ROS, Tensorflow, Pytorch, Keras, HCLIB, CUDA, Git, Django, Processing, OpenCV, Docker, MongoDB, MySQL
Languages	English (Fluent), Hindi (Native), Telugu (Native)