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
I. Isukapati, C. Igoe, E. Bronstein V. Parimi, S. Smith — 2020
IEEE Transactions on Intelligent Transportation Systems

Understanding Vulnerability of Communities in Complex Networks
V. Parimi, A. Pal, S. Ruj, P. Kumaraguru, T. Chakraborty — 2019
Arxiv pre-print

Analysis of DSRC accuracy for pedestrian localization
A. Lakshman*, V. Parimi*, S. Smith — 2018
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 $\sim$ 800 applicants)	2018
FICCI Scholarship, Carnegie Mellon University	2018
GSoC Internship	2018
Dean's List, IIIT-Delhi	2017

ACTIVITIES

Graduate Research Assistant August 2019 - Present
Intelligent Coordination and Logistics Laboratory - CMU Research Group

RISS Admissions Committee January 2020 - March 2020
Carnegie Mellon University

Undergraduate Researcher August 2017 - May 2019
Laboratory for Computational Social Systems - IIIT-Delhi Research Group

Undergraduate Researcher August 2016 - May 2019
Precog - IIIT-Delhi Research Group

Teaching Assistant August 2017
Advanced Programming

INVITED TALKS

Planning under Uncertainty for Joint-Task Execution October 2020
NASA HOME STRI Pittsburgh, PA

Computationally Scalable Bayesian Inference Framework June 2020
Rapid Flow Technologies Pittsburgh, PA

Analysis of DSRC accuracy for pedestrian localization October 2018
Hi-tech Robotics Systemz Ltd. 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)