

SriSai Naga Jyotish P

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Education

B. Tech. (Honors) and MS by Research in Electronics and Communications **Hyderabad, IN**
IIIT Hyderabad *2016-2020*
CGPA: 7.92/10

Master's Thesis: Motion planning under non parametric uncertainty

Robotics Research Center (RRC), IIIT Hyderabad

Advisor: Dr. K. Madhava Krishna

The aim of my thesis is to understand various ways to plan trajectories for different robots under uncertainty. As a part of it, the collision avoidance navigation problem is posed as a chance constraint problem and different methods to solve chance constraints are explored and studied.

Research Interests

Motion planning • Optimal control • Uncertainty Estimation • Reinforcement Learning • Computer Vision

Publications

P. S. Naga Jyotish*, Yash Goel*, A. V. S. Sai Bhargav Kumar and K. Madhava Krishna. PIVO: Probabilistic Inverse Velocity Obstacle for Navigation under Uncertainty. IEEE International Conference on Robot and Human Interactive Communication (Ro-MAN) 2019.

P. S. Naga Jyotish*, Yash Goel*, A. V. S. Sai Bhargav Kumar and K. Madhava Krishna. IVO: Inverse Velocity Obstacles for Real Time Navigation. Advances in Robotics (AIR) 2019.

Work Experience

Software Development Engineering Intern - Swiggy May 2019–July 2019

- o Built a platform to drive engineering excellence.
- o Built and deployed a sub-second latency geo-data analysis platform.

Undergraduate Research Assistant - RRC, IIIT Hyderabad

May 2017–Present

- o Worked on developing different motion planning algorithms under uncertainty.
- o Developed different end-to-end navigation frameworks for holonomic agents.
- o As a part of research collaboration with Collins Aerospace, developed a navigation framework for fixed wing UAVs in urban environments.

Student Systems Administrator - IIIT Hyderabad

May 2017–August 2019

- o Responsible for maintenance and deployment of institute-wide infrastructure and services serving ~3000 users.
- o Available 24/7 on-call for all incident response and remediation.
- o Automated server configuration for institute's reverse proxy server that serves over 150 domains.
- o Deployed transparent proxy with SSL interception using SNI parsing.
- o Mentored the next generation of student sysadmins.

Systems Administrator - RRC, IIIT Hyderabad

Mar 2018–Present

Responsible for the maintenance and deployment of centre's high performance computing cluster. Also responsible the deployment and maintenance of the center's website.

Projects

Notable Projects.....

Multi-objective de-novo molecular generation using Deep Reinforcement Learning [PDF]

Developed a system to generate a set of candidate drug molecules given a set of desired molecular properties like melting point, SA score, solubility, number of benzene rings. An RNN is used to generate valid SMILE sequences describing molecules while RL based optimization is used to bias the RNN to generate molecules with desired molecules.

Poisson Image Editor [GitHub]

Image editing tasks posed as optimization problem using differential equations and gradient fields.

Neural Captioning [GitHub]

Implemented the image captioning models from "Show and Tell" and "Show, Attend and Tell" both containing a CNN and

LSTM. The latter model also implements attention before sending the input image features to the RNN.

Unrolling the Shutter [GitHub]

Implemented a Row-Column kernel based CNN for correcting the distortion caused due to rolling shutter of the camera from a single image. Tried to improve the results using appearance flow.

Exploring Power Signatures for Location Forensics of Media Recordings

Developed a system for geographical location identification from electric network frequency signatures of power distribution networks in the media recordings using SVM.

Other Selected Projects.....

- o **Pegasos-SVM** SVM classifier using PEGASOS algorithm. [GitHub]
- o **Chord DHT** Distributed hash table using chord protocol written in Go. [GitHub]
- o **IRC Server-Client** written in C++ with multiple chatrooms. [GitHub]
- o **Transparent Proxy**, written in Go, that serves ~3000 users.
- o **HTTP Proxy Server** written in Python with multi-threading.
- o **Peer to Peer File Sync** A P2P file sharing and syncing client-server written in Python.
- o **Autonomous Navigation of Quadrotors** using ROS.
- o **Reactive obstacle avoidance with Quadrotors** using ROS.

Selected Coursework

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|-----------------------------|--------------------------|-----------------------------|
| o Digital Image Processing | o Advances in Robotics | o Principles of Information |
| o Statistical Methods in AI | o Distributed Systems | Security |
| o Computer Vision | o OS and Algorithms | |
| o Mobile Robotics | o Communication Networks | |

MISC

- | | |
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| o Invited to Dean's Dinner 2017-18 | |
| o Club Coordinator, Photography Club, IIIT Hyderabad | 2017-2018 |
| o Systems Administrator, Felicity 2018 | 2018 |
| o Photographer, Media Team, IIIT Hyderabad | 2016-2017 |

Skills

Advanced.....

Python • Shell • Linux System Administration

Intermediate.....

C/C++ • Go • JS • Ruby • PHP • MATLAB

Computer Vision • Machine Learning

ROS • Gazebo • OpenCV • Tensorflow • PyTorch

Docker • Libvirt • OpenVZ • LDAP • EMail Suites • Monitoring Tools • nodeJS • Slurm • Networking

Familiar.....

Lua • Unreal Engine • Rust • Java • Scala • Windows Administration