Hitesh Arora

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Education

Carnegie Mellon University, School of Computer Science — Pittsburgh, PA
- *Master of Science in Robotics; GPA: 4.22/4.33* — *Aug 2018 - Aug 2020*

Relevant courses: Deep Learning, Reinforcement Learning, Computer Vision

Indian Institute of Technology (IIT) Guwahati — Guwahati, India
- *Bachelor of Technology in Computer Science and Engineering; GPA: 9.69/10.00* — *July 2011 - May 2015*

Received Institute Merit Scholarship for being Department Rank 1

Work Experience

- **Carnegie Mellon University, Robotics Institute** — Pittsburgh, PA
  Graduate Research Assistant, Auton Lab, Advisor: Prof. Jeff Schneider — *Nov 2018 - Present*
  - Studying and designing sample-efficient deep reinforcement learning (DRL) algorithms for end-to-end self-driving.
  - Designed an architecture for self-driving agent to learn control from semantically segmented images and waypoint input to drive in urban settings using DRL. Work accepted at NeurIPS 2019 ML4AD Workshop.
- **Microsoft** — Hyderabad, India
  Software Engineer II, Azure Compute Team — *June 2015 - July 2018*
  - Delivered core compute platform functionalities to achieve availability and performance goals of five 9s (99.999%).
  - Shipped critical features in platform supported migration of IaaS resources from classic to Azure Resource Manager.
  - Designed and implemented automated health monitoring of Service Fabric (SF) infrastructure for Azure Diagnostics services; shipped the throttling service to safeguard Geneva diagnostics cloud services from heavy users.
- **Massachusetts Institute of Technology** — Boston, MA
  Research Intern, Centre for Brain, Minds and Machines, Advisor: Prof. Tomaso Poggio — *May - July 2014*
  - Applied ML methods on neural data from monkeys brains to decode information of remembered stimulus position with more than 90% classification accuracy to help compare spatial working memory in different brain regions.
- **The University of Queensland** — Brisbane, Australia
  Research Intern, SCMB, Advisor: Dr. Scott Beatson — *Dec 2013 - Jan 2014*
  - Developed a pipeline to classify bacterial DNA sequences as either chromosomes or plasmids using ML techniques of HMM, SVM and Neural networks achieving accuracy of 67.7%, 82% and 87.6% respectively.

Graduate Academic Projects

- **Semi-supervised learning**: Designed convolutional auto-encoder based semi-supervised learning pipeline for Diabetic Retinopathy detection. Led to 2% improvement over ResNet18 baseline.
- **Multi-modal Multi-task 3D Object Detection**: Designed and implemented a novel end-to-end multi-modal architecture for 3D Object Detection by proposing a new deep fusion approach across modalities on Argoverse dataset.
- **Neural Network based reconstruction of the Lyman-α forest**: Designed a CNN based architecture to predict optical depth from observed flux from the simulation spectra of Lyman-α forest and achieved promising results.
- **Non-convex optimization for ML**: Studied non-convex problem formulations of sparse recovery and projected gradient descent algorithms including Iterative Hard Thresholding (IHT) and Singular Value Projection (SVP).

Publications

Tanmay Agarwal*, **Hitesh Arora***, Tanvir Parhar*, Shubhankar Deshpande, Jeff Schneider, **Learning to Drive using Waypoints**, NeurIPS 2019 Workshop on Machine Learning for Autonomous Driving (ML4AD).

Volunteer Work

Co-founded the Charvesting project with the Climate Foundation NGO to solve rice-straw burning problem in India. Received the Urban Labs Innovation Challenge Delhi 2016 Award and $100K grant for the pilot project.

Technical Skills

Languages: Python, C++, C#, C, Matlab
Libraries: PyTorch, Tensorflow, OpenAI Gym
Web: HTML, JavaScript, TypeScript
Platforms: Azure, AWS, CARLA simulator