Ravi Tej Akella

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M.S. Robotics student at Carnegie Mellon University seeking full-time roles in CV, ML and Robotics

Education

Carnegie Mellon University — School of Computer Science — Pittsburgh, PA
Master of Science in Robotics — GPA: 4.2/4.33 — *Aug 2021 - May 2023*

Indian Institute of Technology (IIT) Roorkee — Roorkee, India
Bachelor of Technology in Electronics & Communication Engineering — GPA: 8.129/10 — *Jul 2014 - May 2018*
Minors in Computer Science & Engineering

Selected Coursework: Computer Vision (16-720), Statistical Techniques in Robotics (16-831), Optimal Control & Reinforcement Learning (16-745)

Experience

Cruise Automation | Machine Learning Engineer Intern — San Francisco, CA
Maneuver Planning Team — *May 2022 - Aug 2022*

- Leveraged imitation learning to reduce the trajectory optimizer latency in the AV stack by 10%.
- Designed a neural network architecture that generates kinematically-feasible trajectory proposals.
- Trained a conditional generative model that provides high-reward and diverse trajectory samples.

Carnegie Mellon University | Research Assistant — Pittsburgh, PA
Advisor: Prof. Jeff Schneider — *Sep 2021 - Present*

- Designing the machine learning stack for off-road navigation of all-terrain-vehicles (ATVs).
- Bridging model-based and model-free reinforcement learning for fast and precise control of ATVs in the wild.

Purdue University | Research Assistant — West Lafayette, IN
Advisor: Prof. Kamyar Azizzadenesheli, Prof. Vaneet Aggarwal — *Jan 2021 - Jul 2021*

- Developed an attention-based feature selection method to compress the state-space of imitation learning methods.
- Demonstrated 4x improvement in sample-efficiency and increased training stability on PyBullet Gym benchmark.

California Institute of Technology | Researcher — Remote
Advisors: Prof. Anima Anandkumar, Dr. Mohammad Ghavamzadeh (Google Research) — *Oct 2018 - Dec 2020*

- Developed a new policy gradient estimator that uses Bayesian quadrature for more accurate gradient estimation.
- Implemented kernel interpolation and fast-SVD to reduce the computational complexity from cubic to linear.
- Lead contributor on this collaborative project between Caltech and Google Research.

Texas Instruments | Summer Intern — Bangalore, India
Mentor: Ankur Kumar Singh — *May 2017 - Jul 2017*

- Automated the testbench generation workflow for validation of circuit designs — 20x speedup.

Publications

- Deep Bayesian Quadrature Policy Optimization. ***Ravi Tej Akella****, K. Azizzadenesheli, M. Ghavamzadeh, A. Anandkumar, Y. Yue.* AAAI Conference on Artificial Intelligence (**AAAI**) 2021, **NeurIPS Deep RL & Real-World RL Workshops** 2020. [Link]
- Enhancing Perceptual Loss with Adversarial Feature Matching for Super-Resolution. ***Ravi Tej Akella****, S. Halder, A. Shandilya, V. Pankajakshan.* International Joint Conference on Neural Networks (**IJCNN**) 2020. [Link]
- Reinforced Multi-task Approach for Multi-hop Question Generation. *D. Gupta, H. Chauhan,* ***Ravi Tej Akella****, A. Ekbal, P. Bhattacharyya.* International Conference on Computational Linguistics **(COLING)** 2020. [Link]

Open Source Projects

- **Open3D** (5600+ stars, 1400+ forks, 100+ contributors) | Contributor
  A 3D data processing library maintained by the Open Source Vision Foundation (OSVF). [Link]
- **Disentangled Learning with β-Variational Auto-Encoder**
  Implementation of "β-Variational Autoencoders" ***(Burgess et al. 2018)*** using TensorFlow. [Link]

Technical Skills

Languages: Python, C, C++, Java, Shell, LaTeX, MATLAB and Simulink
Frameworks & Technologies: PyTorch, TensorFlow, Keras, Git, Linux