Ravi Tej Akella

(765) 772-0086 | ravitej.akella@gmail.com | akella17.github.io | linkedin.com/in/akella17 | github.com/Akella17

Education

Carnegie Mellon University — School of Computer Science — Pittsburgh, PA
Master of Science in Robotics — GPA: 4.2/4.33 — *Aug 2021 - Aug 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), Learning for 3D Vision (16-825), Optimal Control & Reinforcement Learning (16-745).

Experience

Tesla | Machine Learning Scientist — Palo Alto, CA
AutoPilot E2E Team — *Aug 2023 - Present*

- Train end-to-end self-driving neural networks for Tesla Full Self-Driving (FSD) Beta v12.
- Improved FSD's dynamic object interactions using a joint multi-agent decision-making framework.

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.

Machine Learning Department, CMU | Research Assistant — Pittsburgh, PA
Advisor: Prof. Ben Eysenbach, Prof. Ruslan Salakhutdinov, Prof. Jeff Schneider — *Aug 2022 - July 2023*

- Developed a self-supervised learning method for goal-conditioned RL that exploits the Markov property in MDPs.
- Presented at ICML Learning, Control, and Dynamical Systems workshop; Under review at NeurIPS 2024.

The Robotics Institute, CMU | Research Assistant — Pittsburgh, PA
Advisor: Prof. Jeff Schneider — *Sep 2021 - July 2023*

- Designed a hierarchical offline RL algorithm that uses latent diffusion for batch-constrained Q-learning.
- More stable and offers superior performance relative to prior offline RL works on the D4RL 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.

Publications

- Distributional Distance Classifiers for Goal-Conditioned Reinforcement Learning. *Ravi Tej Akella, B. Eysenbach, R. Salakhutdinov, J. Schneider.* **ICML Workshop** 2023; Under review at **NeurIPS** 2024.
- Reasoning with Latent Diffusion in Offline Reinforcement Learning. *S. Venkatraman*, S. Khaitan*, Ravi Tej Akella*, J. Dolan, J. Schneider, G. Berseth.* **ICLR** 2024.
- Deep Bayesian Quadrature Policy Optimization. *Ravi Tej Akella, K. Azizzadenesheli, M. Ghavamzadeh, A. Anandkumar, Y. Yue.* **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]

Technical Skills

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