Mehul Damani

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Education

- **Massachusetts Institute of Technology** — Cambridge,MA
  Ph.D. in Computer Science — *August 2022 - Present*
  Advisor: *Dylan Hadfield-Menell*
- **Nanyang Technological University** — Singapore
  Bachelor of Mechanical Engineering, Minor in Mathematics — *2018 - 2022*
  Honours (Highest Distinction)

Experience

- **Robot Learning Lab, New York University** — Remote
  Research Intern, advised by Lerrel Pinto — *January 2021 - August 2022*
  - Developed automatic curriculum generation methods for goal-conditioned reinforcement learning agents
- **Multi-Agent Robotic Motion Lab, National University of Singapore** — Singapore
  Research Intern, advised by Guillaume Sartoretti — *April 2020 - July 2022*
  - Developed decentralized reinforcement learning methods for applications in multi-agent systems
  - Co-authored 4 papers, open-sourced code with 100+ stars on Github
- **Satellite Research Centre, Nanyang Technological University** — Singapore
  Research Assistant — *September 2019 - April 2020*
  - Developed regression models to characterize drift and bias of sensors for their integration into the ADCS of a satellite
- **Temasek Labs, Nanyang Technological University** — Singapore
  Research Assistant — *June 2019 - February 2020*
  - Launched and successfully retrieved high-altitude balloon (HAB) in Malaysia to obtain data in near-space region

Publications

[1] S. Casper, X. Davies, C. Shi, *et al.*, "Open problems and fundamental limitations of reinforcement learning from human feedback," *arXiv preprint arXiv:2307.15217*, 2023.

[2] H. Goel, Y. Zhang, **Damani, Mehul**, *et al.*, "Sociallight: Distributed cooperation learning towards network-wide traffic signal control," in *Proceedings of the 2023 International Conference on Autonomous Agents and Multiagent Systems*, 2023, pp. 1551–1559.

[3] Y. Zhang, **Damani, Mehul**, and G. Sartoretti, "Multi-agent traffic signal control via distributed rl with spatial and temporal feature extraction," in *International Conference on Autonomous Agents and Multiagent Systems*, Springer, 2022, pp. 106–113.

[4] Y. Wang, **M. Damani**, P. Wang, *et al.*, "Distributed reinforcement learning for robot teams: A review," *Current Robotics Reports*, Sep. 2022.

[5] **M. Damani**, Z. Luo, E. Wenzel, *et al.*, "Primal2: Pathfinding via reinforcement and imitation multi-agent learning - lifelong," *IEEE Robotics and Automation Letters*, vol. 6, no. 2, pp. 2666–2673, 2021. DOI: 10.1109/LRA.2021.3062803.

[6] F. Laurent, M. Schneider, C. Scheller, *et al.*, "Flatland competition 2020: Mapf and marl for efficient train coordination on a grid world," in *Proceedings of the NeurIPS 2020 Competition and Demonstration Track*, ser. Proceedings of Machine Learning Research, vol. 133, PMLR, Jun. 2021, pp. 275–301.

Projects

- **Adversarial Vulnerabilities of CLIP** — April 2023 - May 2023
  - Generated perceptible, universal perturbations through gradient descent techniques, resulting in the misclassification of perturbed images by OpenAI's CLIP model
- **Vigilant Bot** — January 2020
  - Created RNN-based embedded hardware device to detect distress calls conveyed through complex hand gestures
- **Vertical Take-off & Landing Aircraft (VTOL)** — August 2019 - May 2020
  - Conceptualized, designed, assembled and tested an electric Vertical Take-off and Landing aircraft (VTOL) prototype
- **Optimal Debris Deorbiting System** — August 2019 - December 2019
  - Devised mission concept report to deorbit space debris from low-earth orbit (LEO) using bidirectional ion thrusters

Skills

- **Languages:** Python, C, MATLAB
- **ML Frameworks:** TensorFlow, Torch, Ray, wandb
- **Others:** Conda, Docker, Git, Linux, Slurm

Honors and Awards

- Vicom Book Prize 2019
- Dean's List (Top 5% of cohort) 2018-19, 2019-20
- Invited Tedx speaker on **Black Holes and Time Travel** 2017
- Kishore Vaigyanik Protsahan Yojana Scholar (Awarded by Department of Science and Technology, India) 2017

Reviewing

- International Conference on Robotics and Automation (ICRA) 2021-2023
- International Conference on Intelligent Robots and Systems (IROS) 2023
- International Conference on Machine Learning (ICML) 2023
- Conference on Neural Information Processing Systems (NeurIPS) 2022
- Association for the Advancement of Artificial Intelligence (AAAI) 2022