

Mehul Damani

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Research Interests: Reinforcement Learning, Robotics and Vision

EDUCATION

- **Nanyang Technological University** Singapore
Bachelor of Mechanical Engineering, Minor in Mathematics July 2018 - Present
GPA: 4.81/5 (On track for First Class) ; Converted GPA(4.0 scale): 3.9/4
Relevant Coursework: Data Structures (A+), Probability (A+), Stochastic Processes (A+), Statistics (A+), Optimization (A)
- **Neerja Modi School** Jaipur
Central Board of Secondary Education; 97.6% April 2015 - July 2018

EXPERIENCE

- **Robot Learning Lab, CILVR Cluster, New York University** Remote
Research Intern, advised by Lerrel Pinto January 2021 - Present
 - Developing automatic curriculum generation methods which dynamically modify task and goal distributions for deep reinforcement learning agents in an attempt to achieve improved sample efficiency and generalization
 - Running large batch experiments on a multitude of robotic reinforcement learning environments such as Fetch, Hand and Ant using slurm scripting on NYU's Greene supercomputer
- **Multi-Agent Robotic Motion Lab, National University of Singapore** Singapore
Research Intern, advised by Guillaume Sartoretti April 2020 - Present
 - Developing decentralized reinforcement learning solutions for applications in multi-agent robotics
 - Implemented reinforcement learning methods to solve multi vehicle routing problems on dense railway networks and achieved fourth position in the **NeurIPS 2020 Flatland Challenge**
 - Currently creating reinforcement learning based multi-agent traffic signal control methods with the aim of achieving increased coordination between agents (traffic junctions) through localized communication
 - Co-authored 2 papers, open-sourced code with 40+ 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. Wang, Y. *et al.* Distributed Reinforcement Learning for Robot Teams: A Review. *arXiv preprint arXiv:2204.03516* (2022).
2. **Damani, M.** *et al.* PRIMAL2: Pathfinding Via Reinforcement and Imitation Multi-Agent Learning - Lifelong. *IEEE Robotics and Automation Letters* **6**, 2666–2673 (2021).
3. Laurent, F. *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* **133** (PMLR, June 2021), 275–301.

SKILLS

- **Languages:** Python, C, Bash, MATLAB
- **ML Frameworks:** Scikit, TensorFlow, Keras, Torch, wandb
- **Others:** Conda, Docker, Git, Linux, Slurm (hpc), Latex, Arduino

PROJECTS

- **Neural MMO** September 2021-Present
 - Contributing to Neural-MMO, a massively multiagent AI research environment where agents forage for resources and engage in strategic combat within a persistent game world (In collaboration with Joseph Suarez at MIT)
- **Vigilant Bot** January 2020
 - Created RNN-based embedded hardware device to detect distress calls conveyed through complex hand gestures
- **Air Crash Analysis** March 2020 - April 2020
 - Visualized and analyzed different trends in aviation accidents using Pandas, Matplotlib, Scikit and Seaborn
- **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

HONORS, AWARDS AND SERVICE

- Reviewer for ICRA 2020
- Dean's List (Year 1 and Year 2)
- Awarded Vicom Book Prize for being top scorer in MA2007: Thermodynamics
- Best Science Student - October, 2017
- Delivered Tedx talk on **Black Holes and Time Travel** - June, 2017
- Kishore Vaigyanik Protsahan Yojana (KVPY) Scholar - March, 2017
- National Talent Search Scholar (NTSE) - May, 2016