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; GPA: 4.81/5 — *July 2018 - Present*
  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, New York University** — Remote
  Research Intern, advised by Lerrel Pinto — *January 2021 - Present*
  - Developing automatic curriculum generation methods to dynamically modify task distributions for training deep reinforcement learning agents
  - Running batch experiments for hyperparameter tuning 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 working on Reinforcement learning based multi-agent traffic signal control with the aim of achieving increased coordination between agents (traffic junctions) through communication
- **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 high-altitude latex balloon (HAB) in Malaysia to obtain data in near-space region at altitudes above 20 km

Publications

1. **Damani**, **M.** *et al.* PRIMAL2: Pathfinding Via Reinforcement and Imitation Multi-Agent Learning - Lifelong. *IEEE Robotics and Automation Letters* **6,** 2666–2673 (2021).
2. Laurent, F. *et al.* Flatland Competition 2020: MAPF and MARL for Efficient Train Coordination on a Grid World. *Accepted at NeurIPS 2020 Competition Track.*

Skills

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

Projects

- **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