Mosam Dabhi

mosam.dabhi@gmail.com | +14127264454 | Pittsburgh, PA | https://mosamdabhi.github.io/

Education

Carnegie Mellon University — *Pittsburgh, USA*

Master of Science in Robotics (School of Computer Science) — *August 2019 – May 2021*

- Advisor: **Simon Lucey**
- Thesis committee: Simon Lucey (chair), Katerina Fragkiadaki, Nathaniel Chodosh

National Institute of Technology — *Surat, India*

B.Tech. in Electronics and Communication Engineering — *August 2013 – May 2017*

- Advisor: **Anand Darji**

Research Interests

Computer Vision: 3D reconstruction, Multi-view geometry, Neural Rendering, Neural 3D representations
Deep Learning: Self/semi supervised learning, structured optimization
Robotics: Active Perception, Probabilistic Decision Making, Control Theory

Research Experiences

Carnegie Mellon University — *Pittsburgh, PA, USA*

Graduate Research Assistant — *August 2019 – Present*

Advisor: **Simon Lucey, Laszlo Jeni**

- Generating high-fidelity 3D reconstruction of non-rigid objects by leveraging only two physical views **[1]**.
- Learning shape priors for sparse 3D reconstruction from images using multi-view geometry.
- Investigating implicit neural rendered pipelines for dense 3D reconstruction from images.

Apple Inc. — *San Francisco, CA, USA*

Research Intern — *May 2020 – August 2020*

Advisor: **Ian Fasel**

- 2D – 3D lifting methodologies for in-the-wild 3D reconstruction.

Carnegie Mellon University — *Pittsburgh, PA, USA*

Research Associate — *August 2017 – August 2019*

Advisor: **Nathan Michael**

- Sensor model for robotic exploration of unknown environments that outperforms state-of-the-art methods for Urban Search and Rescue operation scenarios **[2]**.
- Optimal control strategy on computationally constrained platforms for aggressive aerial flights in uncertain environments **[3]**.
- Robotic cave exploration assuming continuous representation of environment over discrete representation **[4]**.
- System-level application of aerial robots for deploying safe, resilient, and intelligent systems in real-world scenarios **[5]**.

Carnegie Mellon University — *Pittsburgh, PA, USA*

Robotics Institute Summer Scholar — *May 2017 – August 2017*

Advisor: **Nathan Michael**

- Nonlinear model predictive control strategies at the embedded level for aerial robots **[6]**.

Carnegie Mellon University — *Pittsburgh, PA, USA*

Robotics Institute Summer Scholar — *May 2016 – August 2016*

Advisor: **Nathan Michael**

- Framework for planning aggressive, dynamically feasible, and optimal trajectories for aerial robots in cluttered environments **[7]**.

Indian Institute of Science — *Bangalore, Karnataka, India*

Research Intern — *May 2015 – August 2015*

Advisor: **Prasanta Kumar Ghosh**

- Speech-based digit recognition over Mel-frequency spectrum using support vector machines.

National Institute of Technology — *Surat, India*

Undergraduate Research Assistant — *May 2014 – August 2016*

Advisor: **Anand Darji**

- Deep-learning based precision farming application.

Publications

[1]	**M. Dabhi**, C. Wang, K. Saluja, S. Looi, L. Jeni, I. Fasel, S. Lucey, "Two views are all you need" submitted to, *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*	*2021*
[2]	**M. Dabhi**, W. Tabib, N. Michael, "Divergence-based Active Perception using Gaussian Mixture Models" in preparation for, *Robotics: Science and Systems (RSS)*	*2021*
[3]	**M. Dabhi**, A. Spitzer, N. Michael, "Aggressive Flight Performance using Robust Experience-driven Predictive Control Strategies: Experimentation and Analysis" in, *Carnegie Mellon University Repository*, Tech. Report	*June 2019*
[4]	W. Tabib, K. Goel, J. Yao, **M. Dabhi**, C. Boirum, and N. Michael, "Real-Time Information-Theoretic Exploration with Gaussian Mixture Model Maps" in, *Proceedings. of the Robotics: Science and Systems (RSS)*, Freiburg, Germany	*June 2019*
[5]	A. Spitzer, X. Yang, J. Yao, A. Dhawale, K. Goel, **M. Dabhi**, M. Collins, C. Boirum, and N. Michael, "Fast and Agile Vision-Based Flight with Teleoperation and Collision Avoidance on a Multirotor" in, *Proceedings of the International Symposium on Experimental Robotics*, Buenos Aires, Argentina	*November 2018*

Posters

[6]	**M. Dabhi**, and N. Michael, "Implementation of Experience-driven Predictive Control on Computationally Constrained Platform", in, *Robotics Institute Summer Scholar Poster Session*, Pittsburgh, United States	*August 2017*
[7]	**M. Dabhi**, V. R. Desaraju, and N. Michael, "Planning Aggressive, Dynamically Feasible and Optimal Trajectories for Autonomous Vehicles in Cluttered Environments using Mixed Integer Programming", in, *Robotics Institute Summer Scholar Poster Session*, Pittsburgh, United States	*August 2016*

Honors and Awards

May 2017	**Federation of Indian Chambers of Commerce & Industry Research Scholarship**, Received RISS-FICCI scholarship for exceptionally competitive RISS 2017 program.	*FICCI, India*
2016 - 2017	**Robotics Institute Summer Scholar (RISS)**, Awarded RISS (CMU) for two consecutive summers.	*Carnegie Mellon University, Pittsburgh, USA*
Aug. 2016 - May 2017	**Technical Education Quality Improvement Programme (TEQIP)**, Government of India, Ministry of Human Resource Development(MHRD) funding received as part of development for precision farming applications technology.	*MHRD, India*

Professional Service

2017 - 2020	**Robotics Institute Summer Scholars (RISS)**, • Rebuilding RISS Website • Assistance in rebuilding RISS Admissions Systems • RISS Admissions Committee 2018, 2020	*Carnegie Mellon University, Pittsburgh, USA*
June 2018	**Robotics: Science and Systems · A Robotics Conference**, • Student Volunteer at RSS Conference	*Pittsburgh, USA*

Proficient Skills

Systems: Linux/Unix
Languages: Python, C, C++, MATLAB, LaTeX, HTML
Software: PyTorch, Tensorflow, ROS (Robot Operating System), Git

Selected Coursework

Carnegie Mellon University: Computer Vision (**A**), Simultaneous Localization and Mapping (**A**+)
Machine Learning (**A**), Mathematics Fundamentals for Robotics (**A**)
Convex Optimization (**A**)**(Mid-Sem)**