Megha H. Tippur

mhtippur@mit.edu | Website | (334) 559 – 2185 | Cambridge, MA | United States Citizen

Education

Massachusetts Institute of Technology — Cambridge, MA
Ph.D. Electrical Engineering and Computer Science, *GPA 5.0 / 5.0* — *September 2022 – Present*
M.S. Mechanical Engineering, *GPA 5.0 / 5.0* — *September 2020 – September 2022*

- *Research:* Design & use of camera-based tactile sensors for dexterous robotic manipulation, advised by Dr. Edward Adelson.
- *Master's Thesis:* "Design and Manufacturing Methods for a Curved All-Around Camera-Based Tactile Sensor"
- *Coursework:* Robotic Manipulation, Deep Learning, Computer Vision, System Dynamics & Control, Modeling & Simulation

Georgia Institute of Technology — Atlanta, GA
B.S. Electrical Engineering, *GPA 4.0 / 4.0* — *August 2016 – May 2020*

- *Minor:* Robotics
- *Coursework:* Automation & Robotics, Machine Learning, Digital Signal Processing, Control System Design, Digital Design

Research Experience

Adaptive Robotic Manipulation Lab, Georgia Institute of Technology — Atlanta, GA
Undergraduate Research Assistant — *January 2019 – May 2020*

- Designed and developed a wearable robotic turret gun that utilized haptic feedback to inform users of a target's position and autonomously fire at objects, advised by Dr. Frank Hammond III.

Sung Robotics Lab, GRASP Lab at University of Pennsylvania — Philadelphia, PA
Summer Undergraduate Research Assistant — *June 2019 – August 2019*

- Designed and studied mechanical and electrical properties of knitted shape-memory alloy (SMA) actuators for applications in soft robotics and programmable matter, advised by Dr. Cynthia Sung.

NASA Jet Propulsion Lab and California Institute of Technology — Pasadena, CA
Caltech WAVE Fellows Summer Research Assistant — *May 2018 – August 2018*

- Studied reliability, degradation, and efficiency of 64-pixel Superconducting Nanowire Single-Photon Detectors (SNSPDs) for NASA Deep Space Optical Communications (DSOC) experiments, managed by Dr. Matthew Shaw.

Butera Neural Engineering Lab, Georgia Institute of Technology — Atlanta, GA
Undergraduate Research Assistant — *May 2017 – May 2020*

- Studied neural stimulation and blocking of the tibial nerves in rats by analyzing imaged gait patterns and EMG signals from the animal's muscles for possible applications in physical therapy, advised by Dr. Robert Butera.

Awards and Honors

- NSF Graduate Research Fellow — *2020*
- MIT Mechanical Engineering Chang-Mansfield Fellowship — *2020*
- Electrical Engineering Senior Scholar Award, Georgia Institute of Technology — *2020*
- Caltech Wave Fellowship — *2019*
- Stamps President's Scholarship (Merit-based, Full-ride, Top 1% of Applicants) — *2016*
- James and Ophelia Killgore Scholarship (Merit-based) — *2016*

Publications

- N. Sunil*, **M. Tippur***, E. Adelson, A. Rodriguez, "Learning Visuotactile Correspondences for Robotic Cloth Manipulation," *in preparation.*
- **M. Tippur** and E. Adelson, "RainbowSight: A Family of Generalizable, Curved, Camera-Based Tactile Sensors for Shape Reconstruction," *ICRA, 2024.*
- S. Yuan, S. Wang, R. Patel, **M. Tippur**, C. Yako, E. Adelson, J. K. Salisbury, "Tactile-Reactive Roller Grasper," *T-RO, 2024 (under review).*
- T. Chen, **M. Tippur**, S. Wang, V. Kumar, E. Adelson, P. Agarwal, "Visual Dexterity: In-Hand Dexterous Manipulation from Depth," *Science Robotics, 2023.*
- **M. Tippur** and E. Adelson, "Gelsight360: An Omnidirectional Camera-Based Tactile Sensor for Dexterous Robotic Manipulation," *RoboSoft, 2023.* **Best Paper Finalist.**
- S. Pai*, T. Chen*, **M. Tippur***, E. Adelson, A. Gupta, P. Agarwal, "TactoFind: A Tactile Only System for Object Retrieval," *ICRA, 2023.*
- C. Kim, A. Chien, **M. Tippur** and C. Sung, "Fabrication and Characterization of I-cord Knitted SMA Actuators," *RoboSoft, 2021.*
- **M. Tippur**, W. A. Clark, F. L. Hammond, "Haptic Feedback-Enabled Robotic Tracking and Targeting System for Enhanced Soldier Awareness and Automated Defensive Capabilities," *2020 NDIA Joint Armaments and Robotics Conference and Exhibition.*
- N. Kirkpatrick, **M. Tippur**, R. J. Butera, Y. Chang, "DeepLabCut Increases Markerless Tracking Efficiency in Bi-Planar X-Ray Video Analysis of Rat Kinematics," *2020 Virtual 44th Meeting of the American Society of Biomechanics.*

Skills and Interests

- **Programming:** Python, C++, VHDL, Matlab, Java, some knowledge of Assembly
- **Hardware and Prototyping**: extensive PCB Design (EAGLE), Digital Design, AutoCAD, SolidWorks, 3D printing and mechanical machining experience, extensive silicone molding design and fabrication experience
- **Interests**: Playing bassoon, alto saxophone, and violin, running