LUCAS MANUELLI

CONTACT INFORMATION

Stata Center Room 32-380
32 Vassar St
Cambridge, MA, 02139

Email: lucas.t.manuelli@gmail.com
Email: manuelli@mit.edu
website: www.lucasmanuelli.com

RESEARCH INTERESTS

I work in robotics at the intersection of perception, control and machine learning. Specifically I am passionate about making robots that can accomplish meaningful tasks *in the wild*. I believe that achieving this will require a tight coupling of both perception and control. My research has focused on exploring this connection between perception and control, as it applies to robotic manipulation, using tools from both classical robotics and machine learning.

EDUCATION

Massachusetts Institute of Technology *September 2015 - Present*
PhD Candidate, Robot Locomotion Group
Advised by Prof. Russ Tedrake
Department of Electrical Engineering and Computer Science (EECS)
GPA: 5.0/5.0

Massachusetts Institute of Technology *January 2018*
Masters of Science (SM)
Advised by Prof. Russ Tedrake
Department of Electrical Engineering and Computer Science (EECS)
GPA: 5.0/5.0

Massachusetts Institute of Technology *May 2015*
Masters of Science (SM)
Department of Economics
GPA: 4.9/5.0

Princeton University *June 2012*
Bachelor of Arts, Summa Cum Laude
Department of Mathematics
GPA: 3.97/4.0

HONORS AND AWARDS

Conference on Robot Learning (CoRL) Best Paper Award October 2018
Amazon Robotics Best Paper Awards in Manipulation: Best Technical Paper 2018
School of Engineering Lemelson Presidential Fellowship, MIT 2015-2016
Presidential Fellow, MIT 2012-2013
National Science Foundation Graduate Research Fellowship 2012-2015
Graduated with *High Honors*, Department of Mathematics, Princeton University June 2012
Graduated *Summa Cum Laude*, Princeton University June 2012

Phi Beta Kappa (early selection), Princeton University February 2012
Shapiro Prize for Academic Excellence, Princeton University 2009-2010
Manfred Pyka Memorial Prize in Physics, Princeton University 2009
Shapiro Prize for Academic Excellence, Princeton University 2008-2009
National Merit Scholarship 2008

PEER REVIEWED PUBLICATIONS

* denotes equal contribution

[1] **Self-Supervised Correspondence in Visuomotor Policy Learning**
IEEE Robotics and Automation Letters, April 2020.
Peter Florence, **Lucas Manuelli** and Russ Tedrake.
Also to appear in ICRA 2020.

[2] **kPAM: Keypoint Affordances for Robotic Manipulation**
International Symposium on Robotics Research, 2019
Lucas Manuelli*, Wei Gao*, Peter Florence and Russ Tedrake.
Also in CVPR 2019 Workshop on 3D Scene Understanding

[3] **DenseObjectNets: Learning Dense Visual Object Descriptors by and for Robotic Manipulation**
Conference on Robot Learning, 2018
Peter Florence*, **Lucas Manuelli*** and Russ Tedrake
Winner of CoRL 2018 ***Best Paper Award***
Winner, ***Best Technical Paper****, Amazon Robotics Best Paper Awards in Manipulation 2018*

[4] **LabelFusion: A Pipeline for Generating Ground Truth Labels for Real RGBD Data of Cluttered Scenes**
In International Conference on Robotics and Automation (ICRA) 2018
Pat Marion*, Peter Florence*, **Lucas Manuelli*** and Russ Tedrake
ICRA Best Vision Paper Finalist

[5] **Localizing external contact using proprioceptive sensors: The contact particle filter**
International Conference on Intelligent Robots and Systems (IROS) 2016
Lucas Manuelli and Russ Tedrake

[6] **Director: A user interface designed for robot operation with shared autonomy**
Journal of Field Robotics, 2017
Pat Marion, Maurice Fallon, Robin Deits, Andrs Valenzuela, Claudia Prez D'Arpino, Greg Izatt, **Lucas Manuelli**, Matt Antone, Hongkai Dai, Twan Koolen, John Carter, Scott Kuindersma, Russ Tedrake.

INDUSTRY EXPERIENCE

Amazon Robotics Jun-Aug 2017
Interned at Amazon Robotics where I developed and implemented advanced grasping algorithms on robot arms.

ADDITIONAL ROBOTICS EXPERIENCE

MIT DARPA Robotics Challenge Team Jan 2015 - June 2015

Member of MIT's Darpa Robotics Challenge (DRC) team working on planning and controls for the Atlas robot. Specifically I worked on the motion planning and controls used for the driving and egress

portions of the challenge. Subsequent to the DRC finals I also worked on the walking control system.

NASA Valkyrie Walking Controller 2016

Implemented a walking controller for the NASA Valkyrie robot using the LIPM (linear inverted pendulum model) formulation together with a QP (quadratic program) for realtime control. This controller was adapted from the walking controller used for the Atlas robot during the Darpa Robotics Challenge.