Sean Mason

120 Upland Rd
Cambridge, MA 02140
seanmason337@gmail.com
www.masonrobotics.com

EDUCATION

JUNE 2018 AUGUST 2012	Ph.D. and M.S. in *Computer Science*, **University of Southern California** Computation Learning and Motor Control Lab (CLMC) Adviser: Prof. Stefan Schaal and Ludovic Righetti	*Los Angeles, CA*
JUNE 2012 AUGUST 2007	M.S. and B.S. in *Mechanical Engineering and Mechanics*, **Drexel University** Drexel Autonomous Systems Lab (DASL) Adviser: Prof. Paul Oh	*Philadelphia, PA*

WORK EXPERIENCE

CURRENT OCTOBER 2018	**Boston Dynamics**, Advanced Robotics Engineer	*Waltham, MA*

- Develop planning and controls software for humanoid robot performing parkour and gymnastics
- Design and preform tests that push hardware and software boundaries
- Perform root cause failure analysis of software and hardware issues

MARCH 2017 AUGUST 2017	**Max Planck Institute**, Freelance Roboticist	*Tuebingen, Germany*

- Developed a walking control system for bipedal locomotion
- Programmed low-level torque control firmware for humanoid robots

OCT. 2016 JUNE 2016	**Walt Disney Imagineering R&D**, Advanced Development Intern	*Glendale, CA*

- Developed planning, control, and state estimation algorithms for autonomous quadruped robot
- Tested and validated software on state of the art robot system

APRIL 2012	**Czech Technical University**, Exchange Researcher	*Prague, Czech Republic*

- Implemented Smooth Nearness Diagram (SND) navigation algorithm on mobile robot
- Documented challenges and features to develop an internet accessible robotics testbed

MARCH 2011 SEPT. 2010	**KAIST Humanoid Robotics (Hubo) Lab**, Robotics Researcher	*Daejeon, South Korea*

- Created 3D CAD drawings of humanoid robot HUBO
- Created full body assembly/disassembly wiki and videos for HUBO robot
- Built Force-Torque Sensor and microcontrollers with LED display

MARCH 2010 SEPT. 2009	**Navsea**, Mechanical Engineer Internship	*Philadelphia, PA*

- Provided technical feedback regarding Control Pitch Propeller (CPP) related issues for active navy ships specifically regarding part configuration, part availability, maintenance procedures, and maintenance scheduling.

MARCH 2009 SEPT. 2008	**ARL Navigation Lab Penn State**, Mechanical Engineer Internship,	*Warminster, PA*

- Testing and development of a MEMs gyro sensor.
- Recorded resonance scans of chips using LabVIEW and Matlab
- Designed, modeled, and evaluated gyro casing using Solidworks

June 2012 March 2008	**Drexel Autonomous Systems Lab** Robotics Researcher *Philadelphia, PA* • Built 3 degree of freedom gantry for a miniature humanoid test environment • Built motor test fixture using CNC machine and lathe • Implemented path planning and walking pattern generation for a 21 DoF humanoid • Lectured C programming course for summer interns

Computer Skills

Programming:	**C++**, **Python**, **Matlab**, Java, Swift
Design:	**Inventor**, Solidworks, MasterCAM, Photoshop, Illustrator

Conferences and Publications

S. Mason, N. Rotella, S. Schaal, and L. Righetti "**An MPC Walking Framework With External Contact Forces**", *In International Conference on Robotics and Automation (ICRA), 2018*

A. Gams , **S. Mason**, A. Ude, S. Schaal, and L. Righetti "**Learning Task-Specific Dynamics to Improve Whole-Body Control**", *Submitted to International Conference on Intelligent Robots and Systems (IROS), 2018*

J. Rebula, **S. Mason**, S. Schaal, L. Righetti "**Inverse Optimal Control for a Simple Stepping Task**", *In Proceedings of Dynamic Walking, 2017*

S. Mason, N. Rotella, S. Schaal, and L. Righetti "**Balancing and Walking Using Full Dynamics LQR Control with Contact Constraints**", *In IEEE-RAS International Conference on Humanoid Robots (Humanoids), 2016*

N. Rotella, **S. Mason**, S. Schaal, and L. Righetti "**Inertial Sensor-Based Humanoid Joint State Estimation**", *In IEEE International Conference on Robotics and Automation (ICRA), 2016*

A. Herzog, N. Rotella, **S. Mason**, F. Grimminger, S. Schaal, and L. Righetti "**Momentum Control with Hierarchical Inverse Dynamics on a Torque-controlled Humanoid**", *In Autonomous Robots Journal, 2016*

N. Rotella, **S. Mason**, S. Schaal, L. Righetti "**IMU-based Joint State Estimation for Humanoid Control**", *In Proceedings of Dynamic Walking, 2016*

S. Mason, S. Schaal, L. Righetti "**Full Dynamics LQR Control With Multi Contact Phases For Bipedal Walking**", *In Workshop of IEEE-RAS International Conference on Humanoid Robots (Humanoids), 2015*

S. Mason, S. Schaal, and L. Righetti "**Full Dynamics LQR Control for Walking**", *In Proceedings of Dynamic Walking, 2015*

A. Herzog, N. Rotella, **S. Mason**, F. Grimminger, S. Schaal, L. Righetti "**Multi-Contact Interaction with Hierarchical Inverse Dynamics and Momentum Trajectory Generation**", *In Proceedings of Dynamic Walking, 2015*

S. Mason, L. Righetti, and S. Schaal "**Full Dynamics LQR Control of a Humanoid Robot: An Experimental Study on Balancing and Squatting**", *In IEEE-RAS International Conference on Humanoid Robots (Humanoids), 2014*

S. Mason and L. Righetti and S. Schaal , "**Towards Full System Linear Quadratic Regulators for Humanoid Control**", *In Proceedings of Dynamic Walking, 2014*

S. Mason "**Bipedal Walking Trajectory Energy Minimization Through Learned Hip Height Trajectory**", *Drexel University Masters Thesis, 2012*