

## Stephen Gerald McGill, Jr.

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### Summary

Experienced researcher in machine learning, computer vision and kinodynamic planning techniques for driver intent estimation and risk mitigation for autonomous car product. Proven team leader through DARPA Robotics Challenges and international RoboCup competitions with strong foundations in field robotics, human interfaces, funding allocation, and personnel management. Invited to public speaking engagements and international research talks, managed institutional relationships and regarded as valuable teaching assistant, which demonstrate strong communication and social skills.

### Experience

<b>Research Scientist</b> , Toyota Research Institute, Cambridge, MA Driver intent estimation for Guardian parallel autonomy vehicle	June 2016 – Present
<b>Software Team Leader</b> , Team THOR, DARPA Robotics Challenge Finals: 13th of 24, Challenge Trials: 9th of 16	October 2012 – May 2016
<b>Team Leader</b> , Team DARwIn and Team THORwIn, RoboCup Louis Vuitton Cup Winner 2015; First place 2011-2015	January 2010 – July 2016
<b>Research Fellowship</b> , Sapienza University of Rome Transatlantic Partnership for Excellence in Engineering Award	December 2013 – July 2014
<b>Technology Disclosure Fellow</b> , UPenn Center for Technology Transfer	May 2012 – September 2013
<b>Residential Advisor and Coordinator</b> , UPenn Residential Services	August 2011 – December 2013
<b>Machine Learning Software Intern</b> , Capital IQ, New York, NY	May 2010 – August 2010
<b>Technology Policy Research Intern</b> , IEEE-USA, Washington, DC	June 2009 – August 2009
<b>Hardware and Grant Writing Intern</b> , Dragonfly Pictures, Essington, PA	December 2008 – January 2009
<b>Network Equipment Intern</b> , Communications Test Design, West Chester, PA	June 2006 – August 2007

### Education

<b>Doctor of Philosophy</b> , Electrical Engineering. May, 2016 University of Pennsylvania, Philadelphia, PA Dissertation: <i>Scaled Autonomy for Networked Humanoids</i> . Advisor: Daniel D. Lee 2010 Ashton Fellowship, 2011 NSF GRFP Honorable Mention
<b>Master of Science in Engineering</b> , Robotics. May, 2011 University of Pennsylvania, Philadelphia, PA
<b>Bachelor of Science in Engineering</b> , Majors: Electrical Engineering, Computer Science. May, 2010 University of Pennsylvania, Philadelphia, PA Honors: Graduated <i>Cum Laude</i> , Dean's List 2009-10 2009 Engineering Alumni Society E. Stuart Eichert, Jr. Award

### Invited Talks

<b>Humans-in-the-Loop for Autonomous Driving Development</b> , Museum of Science, Boston	May & October, 2017
<b>Human-in-the-Loop Perception, Planning and Control</b> , MIT 2.12	November, 2017
<b>Motion and Perception for Humanoids in Field Robotics</b> , Columbia University CS 6731	April, 2016
<b>Scaled Autonomy for Networked Humanoids</b> , Temple University	February, 2016
<b>Robotics for the Insurance Industry and the Workforce</b> , Wharton Executive Education: KPMG Global Insurance Academy	December, 2015
<b>Scaled Autonomy for Networked Humanoids</b> , Bucknell University	October, 2015
<b>Human Interface Control of Next Generation Humanoids</b> , TU Darmstadt, Germany	March, 2014
<b>Beyond DARwIn: Applying Concepts from Robot Soccer</b> , TU Darmstadt, Germany	June, 2012
<b>Robots for Life: On the Path to Robotic Healthcare</b> , TEDxColumbiaEngineering, New York	October, 2012
<b>Robotics and Energy</b> , Young Researchers Transatlantic Academy, Aachen, Germany	June, 2012
<b>Team DARwIn</b> , TEDxPhoenixville, Pennsylvania	September, 2011

## Selected Publications

- Stephen G McGill** *Systems and methods for dynamically adjusting a vehicle trajectory according to deviations of a driver from expected inputs*. Patent Pending.
- Stephen G McGill**, Seung-Joon Yi, Hak Yi, Minsung Ahn, Sanghyun Cho, Kevin Liu, Daniel Sun, Borham Lee, Heejin Jeong, Jinwook Huh, Dennis Hong, and Daniel D. Lee.  
*Team THOR's Entry in the DARPA Robotics Challenge Finals*.  
Journal of Field Robotics, Volume 34, Issue 4, June 2017
- Stephen G McGill**, Seung-Joon Yi and Daniel D. Lee. *Low Dimensional Human Preference Tracking for Motion Optimization*.  
IEEE-RAS International Conference on Robotics and Automation, 2016.
- Stephen G McGill**, Seung-Joon Yi, Daniel D. Lee.  
*Team THOR's Adaptive Autonomy for Disaster Response Humanoids*.  
15th IEEE-RAS International Conference on Humanoid Robots, 2015.
- Seung- Joon Yi, **Stephen G McGill**, Larry Vadakedathu, Qin He, Inyong Ha, Jeakweon Han, Hyunjong Song, Michael Rouleau, Byoung-Tak Zhang, Dennis Hong, Mark Yim, Daniel D. Lee.  
*Team THOR's Entry in the DARPA Robotics Challenge Trials 2013*.  
Journal of Field Robotics, Volume 32, Issue 3, 2015.
- Seung-Joon Yi, **Stephen G McGill**, Byoung-Tak Zhang, Dennis Hong, Daniel D. Lee.  
*Active stabilization of a humanoid robot for real-time imitation of a human operator*.  
12th IEEE-RAS International Conference on Humanoid Robots, 2012.
- Stephen G McGill** and Daniel D. Lee.  
*Cooperative humanoid stretcher manipulation and locomotion*.  
11th IEEE-RAS International Conference on Humanoid Robots, 2011.

## Teaching

<b>Coursera Teaching Assistant</b> , State Estimation and Learning for Robotics	Fall 2015 – Spring 2016
<b>Teaching Assistant</b> , ESE650: Learning in Robotics	Spring 2012 – Spring 2015
<b>Teaching Assistant</b> , ESE450, ESE 451: Senior Design	Fall, Spring 2013 – 2015
<b>Teaching Assistant</b> , Introduction to Robotics Technology UPenn Summer Academy in Applied Science and Technology	Summer 2013
<b>Teaching Assistant</b> , ESE410/510: Design of Mechatronic Systems	Fall 2011
<b>Teaching Assistant</b> , CIS110: Introduction to Computer Programming (Java)	Spring 2009
<b>Teaching Assistant</b> , ESE116: C Programming in the Unix Environment	Fall 2008
<b>Residential and Teaching Assistant</b> , Teaching Computer Science Basics UPenn Summer Academy in Applied Science and Technology	Summer 2008

## Service

<b>FIRST Robotics Mentor</b> , Team 1168: Malvern Robotics	November 2014 – Present
<b>High School Student Mentoring</b> , GRASP Lab Robotics	June 2015 – August 2015
<b>Camp Counselor</b> , Muscular Dystrophy Association	June 2015, 2016
<b>Computer Lab Installation in Ghana</b> , Communitech, UPenn	August 2008

## Skills

C, Lua, MATLAB, JavaScript, Python, SQL, Java  
torch7, pytorch, Node.js, UNIX, git, THREE.js