Greg N. Droge

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US Citizen

Education

Georgia Institute of Technology, *Atlanta GA*

Ph.D. Electrical and Computer Engineering   Expected May 2014

GPA:	3.8
Primary Concentration:	Systems & Control
Secondary Concentration:	Digital Signal Processing
Minor:	Mechanical Engineering
Adviser:	Dr. Magnus Egerstedt

M.S. Electrical and Computer Engineering   May 2012

Brigham Young University, *Provo UT*

B.S. Electrical Engineering   August 2009

GPA:	3.9
Minor:	Computer Science
Minor:	Mathematics

Interests

Distributed Optimization, Multi-agent Coordination and Motion Control, Behavior-based Model Predictive Control, Autonomous Navigation, Hybrid Systems

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Research Experience

Georgia Institute of Technology

Graduate Research Assistant   2010-present

Georgia robotics and intelligent systems lab. Developed distributed optimization framework for multi-agent systems with dynamic network topologies. Developed behavior-based distributed model predictive control architecture with application to multi-agent moving formation control. Developed behavior-based model predictive control strategies for autonomous navigation for a single agent in a cluttered, unknown environment.

Space and Naval Warfare Systems Command (SPAWAR) Pacific

SMART Scholar Intern   Summer 2013
                                               Summer 2012

Unmanned Systems Branch. Developed distributed optimization based formation control for multi-agent systems with dynamic network topologies. Implemented behavior-based model predictive control strategies for navigation of a single agent. Implementation done using both SPAWAR's Autonomous Capabilities Suite (ACS) controlling an iRobot Packbot as well as the Robot Operating System (ROS) for simulation.

Georgia Institute of Technology

SLIDER Fellow   2010-2011

Georgia Tech CEISMC center. Implemented a new curriculum using robotics and engineering concepts in a local 8th grade Physical Science class. Worked with the classroom teacher in developing and administering lesson plans to use the new curriculum.

Brigham Young University

Undergraduate Research Assistant   2008-2009

MAGICC Lab. Researched real-time, accurately geo-referenced mosaicing techniques. Programmed in MS Visual Studio using C and C++. Developed software using OpenCV and EMGU for image processing.

Teaching
Experience

Georgia Institute of Technology

Undergraduate Research Tutoring   2012 - 2013

Tutored a group of undergraduate students in research from problem definition to implementation. Responsibilities included directing weekly group meetings and individual student tutoring. Group meetings consisted of students teaching each other what they were learning and getting direction as a whole. Individual tutoring included helping students find background literature, develop solutions, and giving feedback on their written reports.

Georgia Institute of Technology

ECE6553 - Optimal Control   Spring 2011

Co-taught graduate class covering topics in linear and nonlinear optimal control methods and theory. Responsibilities included teaching lectures as well as tutoring graduate students.

East Cobb Middle School

8th Grade Physical Science   2010 - 2011

SLIDER fellow for the CEISMC center at Georgia Tech. Administered a newly developed curriculum for the 8th grade physical science course at East Cobb Middle School. The curriculum consisted of using robotics and engineering concepts to teach principles required for the physical science course. Responsibilities included lesson preparation and administration as well as project design and implementation.

Georgia Institute of Technology

ECE3085 - Introduction to systems and control   2009 - 2010

Teacher Assistant for undergraduate controls class covering topics from classic control theory. Responsibilities included teaching, grading, and tutoring. Also developed and administered a lab using LabView and Lego NXT robots to teach control design at a Junior level.

Brigham Young University

EE220 - Fundamentals of Digital Systems   Spring 2008

Teacher Assistant for undergraduate digital systems design class covering topics in elements of digital system design using Verilog and FPGAs. Responsibilities included administering lab design projects, tutoring students in the design process, and grading.

Awards and Honors		
	SMART Scholar	2011 - 2014
	ARCS Fellowship Recipient	2012
	SLIDER Fellow	2010 - 2011
	Outstanding Teaching Assistant Award	2010
	Georgia Tech Presidential Fellowship	2009 - 2013
	Brigham Young University Magna Cum Laude	2009
	Micron Scholar	2008 - 2009

Special Skills		
	Programming:	C/C++, Java, Matlab, Labview
	Web Development:	HTML, WordPress
	Languages:	Native English speaker and fluent in Spanish

Publications

Journal Articles

G. Droge, M. Egerstedt. "Continuous-time proportional-integral distributed optimization for networked systems," *Journal of Decision and Control*. Under Review.

G. Droge, M. Egerstedt. "Dual-mode dynamic window approach to robot navigation with convergence guarantees," *International Journal of Robotics Research*. Under Review.

R. Chipalkatty, G. Droge, M. Egerstedt. "Less Is More: Mixed Initiative Model Predictive Control With Human Inputs," *IEEE Transactions on Robotics*, June 2013.

Conference Papers

G. Droge and M. Egerstedt, "Proportional integral distributed optimization for dynamic network topologies," in *American Control Conference (ACC)*. IEEE, 2014 (Accepted).

G. Droge and M. Egerstedt, "Distributed parameterized model predictive control of networked multi-agent system," in *American Control Conference (ACC)*. IEEE, 2013.

Z. Xu, M. Egerstedt, G. Droge, and K. Schilling, "Balanced deployment of muliple robots using a modified kuramoto model," in *American Control Conference (ACC)*. IEEE, 2013.

G. Droge, P. Kingston, and M. Egerstedt, "Behavior-Based Switch-Time MPC for Mobile Robots," in *International Conference on Intelligent Robots and Systems (IROS)*. IEEE 2012.

G. Droge, J. Auerbach, and B. Ferri, "Distributed Laboratories: Control System Experiments with LabVIEW and the LEGO NXT Platform," in *American Society for Engineering Education (ASEE)*. ASEE 2012.

G. Droge and M. Egerstedt, "Optimal Decentralized Gait Transitions for Snake Robots," in *International Conference on Robotics and Automation (ICRA)*. IEEE 2012.

G. Droge and M. Egerstedt, "Adaptive Look-Ahead for Robotic Navigation in Unknown Environments," in *International Conference on Intelligent Robots and Systems (IROS)*. IEEE 2011.

G. Droge and M. Egerstedt, "Adaptive Time Horizon Optimization in Model Predictive Control," in *American Control Conference (ACC)*. IEEE 2011.