

Peter Kingston

Ph.D., Electrical and Computer Engineering

Email: peter.m.kingston.07@alum.dartmouth.org

Web: <http://gritslab.gatech.edu/kingston/>



U.S. Citizen

Education	Georgia Institute of Technology, Atlanta GA Ph.D. Electrical and Computer Engineering M.S. Electrical and Computer Engineering GPA: 3.9 Primary Concentration: Systems & Control Secondary Concentration: Digital Signal Processing Minor: Mathematics Adviser: Dr. Magnus Egerstedt Dissertation Title: <i>Multiagent Coordination: Fluid-inspired and optimal-control approaches</i>	May 2012 Aug 2008
	Dartmouth College, Thayer School of Engineering, Hanover NH B.E. Electrical Engineering A.B. Engineering Sciences GPA: 3.8 Magna Cum Laude Choate Scholar (Top 5% of class) Phi Beta Kappa Tau Beta Pi	June 2007 June 2007
Interests	Optimal Control, Nonlinear Control, Geometric Control Optimal Estimation, Machine Learning, Kernel Methods Convex and Distributed Optimization Networked Dynamic Systems, Spectral Graph Theory Geometric Mechanics, Variational Integrators, Riemannian Geometry	

Work Experience	Georgia Institute of Technology <i>Graduate Research Assistant</i> Derived optimal control algorithms for actuated marionettes to mimic human motion-capture data; developed convex-optimization-based approaches to human preference learning; and originated distributed methods for multi-vehicle routing.	2008-present
	IBM Microelectronics <i>Intern Development Engineer</i> High Performance embedded DRAM team. Responsible for design and VLSI layout of deep-trench decoupling capacitor cells used in all 90nm CMOS ASICs. Ported EDA software, written in C, from AIX to Linux, and developed new strategies and software, implemented in Perl, for verifying HDL code.	Summer 2006, 2007

Mercedes-Benz USA*Intern, Technical Assistance Center*

Spring 2005

Automotive troubleshooting program. Organized company events and performed data analysis, report generation, and web development. Created searchable database and forum system for managing documents and discussion threads, written in ASP and ASP.net.

Dartmouth College, Department of Physics*Presidential Scholar*

Summer-Winter 2005

Research assistantship advised by Dr. J. Hayden Brownell, developing resonator for free-electron laser. Involved optics, mechanics, and computer science. Wrote closed-loop computer control system with real-time video analysis and actuator control over Ethernet, implemented in DLLs using C++.

The Depository Trust and Clearing Corporation*Intern*

Summer 2004

Varied responsibilities in the D.T.C.C. Information Center, which sets up, tracks, and provides support for computer assets.

Teaching
Experience**Georgia Institute of Technology***ECE6553 – Optimal Control*

Spring 2011

Co-taught graduate class. Developed lectures on numerical methods for computing optimal control policies, including Approximate Dynamic Programming.

ECE6552 – Nonlinear Control

Spring 2010

Co-taught graduate class, covering topics in geometric control and delivering original lectures on potential-field methods.

TESSAL Center – Teaching Enhancement through Small-Scale Labs

Summer 2011

Ran and developed undergraduate DSP, control, and circuits labs.

ECE3741 – Analog & Digital Electronics

Fall 2007-Spring 2008

Taught circuits lab course to undergraduates. Gave lectures, designed midterm and final exams and weekly quizzes, graded assignments, and instructed students in circuit construction and debugging. **Received teaching award.**

Extracurricular
Activities**Dartmouth Hybrid Racing***Controls Team*

Developed engine controller and data-logging system for student organization that designs, builds, and races a hybrid-electric race car each year in competition sponsored by the Society of Automotive Engineers.

Boy Scout Troop 80*Eagle Scout, Senior Patrol Leader*

Planned and led activities of troop of 50+. Organized the rebuilding of a nature reserve trail.

Special Skills **Programming:** C/C++, Matlab, Assembly (Intel 8051, x86), LISP (Scheme), OpenGL
Circuits: Cadence tools, SPICE, SiMetrix
Mechanical/CAD: ProEngineer
Motion Capture: Vicon VisonIQ, NaturalPoint Tracking Tools
Graphics: Adobe Photoshop
Web Development: HTML, ASP
Operating Systems: Linux, AIX, Windows

Publications **Journal Articles**

- P. Kingston, M. Egerstedt. Time and Output Warping of Control Systems: Comparing and Imitating Motions. *Automatica*, 2011.
P. Kingston, M. Egerstedt. Motion Preference Learning. *SIAM J. Control and Optimization*. Submitted.

Conference Papers

- P. Kingston, M. Egerstedt. Distributed-Infrastructure Generation of Hybrid Homological Patrol Strategies. *Workshop on the Algorithmic Foundations of Robotics (WAFR)*, 2012. Submitted.
G. Droge, P. Kingston, M. Egerstedt. Behavior-Based Switch-Time MPC for Mobile Robots. *International Conference on Intelligent Robots and Systems (IROS)*, 2012. Submitted.
P. Kingston, M. Egerstedt. Distributed-Infrastructure Multi-Robot Routing using a Helmholtz-Hodge Decomposition. *Conference on Decision and Control (CDC)*, 2011.
P. Kingston, M. Egerstedt. Motion Preference Learning. *American Control Conference (ACC)*, 2011.
Received ACC Best Presentation Award.
P. Kingston, M. Egerstedt. Index-Free Multiagent Systems: An Eulerian Approach. *IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys)*, 2010.
T. Kunz, P. Kingston, M. Stilman, M. Egerstedt. Dynamic Chess: Strategic Planning for Robot Motion. *Int'l. Conference on Robotics and Automation (ICRA)*, 2011.
P. Kingston, M. Egerstedt. Time and Output Warping of Control Systems: Comparing and Imitating Motions. *American Control Conference*, 2010.
Received ACC Best Presentation Award.
P. Kingston, M. Egerstedt. Comparing Apples and Oranges through Partial Orders: An Empirical Approach. *American Control Conference*, 2009.
Received ACC Best Presentation Award.
P. Kingston, M. Egerstedt, and E. Verriest. Health Monitoring of Networked Systems. *Mathematical Theory of Networks and Systems*, 2008.