Per Danzl
Curriculum Vitae

Home Address
1078 Miramonte Drive
Apartment 3
Santa Barbara, CA 93109
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Department Address
Department of Mechanical Engineering
University of California Santa Barbara
Engineering II Building
Santa Barbara, CA 93106-5070
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Research Experience

Research Assistant/Doctoral Candidate 04/2006–Present
Department of Mechanical Engineering, UCSB.
Conducting original research in population-level dynamics and event-based feedback control methods for neuron systems with application to electrical deep brain stimulation therapy for Parkinson's Disease.

Dissertation: "Dynamical Characterization and Feedback Control of Oscillatory Neural Systems"

Industry Experience

Intern - Active Life Technologies 11/2008–Present
Assisting a start-up technology company with biomedical research device design, marketing, testing and verification.

Engineer - Honeywell Aerospace 01/2003–06/2005
Project engineer for the Electromechanical Interface Devices product line, which provides electrohydraulic actuation and fuel control systems for military and commercial aircraft engines. Performed modeling, analysis, design, testing, and failure investigation. Represented engineering in a division-level manufacturing transition team.

Education

Mechanical Engineering Doctoral Candidate – UCSB 09/2005–Present
Dynamical systems and control with applications to neural systems. Recent research-related coursework includes linear and nonlinear control theory, dynamical systems and chaos, control over networks, system identification, probability and measure theory, game theory, and numerical methods. Current overall GPA 3.9.

Technology Management Program – UCSB 09/2008–Present
Enrolled in the Graduate Program in Management Practice with a focus on technology development and technical leadership. Recent technology management coursework includes:

The Art of the CEO: Business Skills for Future Leaders
Managing for Innovation
Entrepreneurial Marketing
New Venture Finance
New Venture Creation: Entrepreneurship

Bachelor of Science – University of Minnesota 09/1998–12/2002
Department of Mechanical Engineering. Overall GPA 3.55.

Teaching Experience

Teaching Assistant 09/2005–Present
Department of Mechanical Engineering, UCSB.

Sensors and Actuators Laboratory	Fall 2009
Mechanical Engineering Laboratory	Spring 2009
Senior Design II	Winter 2006
Sensors and Actuators Laboratory	Fall 2005

Refereed Journal Articles

P. Danzl, J. Hespanha, and J. Moehlis. "Event-based minimum-time control of oscillatory neuron models: phase randomization, maximal spike rate increase, and desynchronization" submitted to *Biological Cybernetics*, 2009.

P. Danzl, A. Nabi, and J. Moehlis. "Charge-balanced spike timing control for phase models of spiking neurons" submitted to *Discrete and Continuous Dynamical Systems*, 2009.

P. Danzl and J. Moehlis. "Weakly coupled parametrically forced oscillator networks: existence, stability, and symmetry of solutions" to appear in *Nonlinear Dynamics*, 2009

P. Danzl, R. Hansen, G. Bonnet, and J. Moehlis. "Partial phase synchronization of neural populations due to random Poisson inputs" *Journal of Computational Neuroscience*, 25(1):141157, 2008.

Refereed Conference Proceedings

T. Stigen, P. Danzl, J. Moehlis J, and T. Netoff. "Linear Control of Neuronal Spike Timing Using Phase Response Curves" to appear in *IEEE Engineering in Medicine and Biology Conference*, 2009.

P. Danzl and J. Moehlis. "Event-Based Feedback Control of Nonlinear Oscillators Using Phase Response Curves" with J. Moehlis. *Proceedings of the 46th IEEE Conference on Decision and Control*, pages 5806-5811, New Orleans, LA 2007.

P. Danzl and J. Moehlis. "Spike timing control of oscillatory neuron models using impulsive and quasi-impulsive charge-balanced inputs" in *Proceedings of the 2008 American Control Conference*, pages 171176, Seattle, WA, 2008.

Patent

US Patent 7587900 "Gas turbine engine fuel control system having a transfer valve and a shutoff valve and a common controller therefor" with J. D. Shelby, P. Futa, and M. Arend.

Talks

Feedback Control of Oscillatory Neurons: An Event-Based Approach to Phase Randomization, SIAM Conference on Application of Dynamical Systems, Snowbird Utah UT, May 19, 2009.

Spike Timing Control of Oscillatory Neuron Models Using Impulsive and Quasi-Impulsive Charge-Balanced Inputs American Control Conference, Seattle WA June 11 , 2008.

Event-Based Feedback Control of Nonlinear Oscillators Using Phase Response Curves, 46th IEEE Conf. on Decision and Control, New Orleans LA, December 14 2007.

Feedback Control of Neural Spike Synchrony Using Phase Response Curves, IGERT Student Research Symposium, Carnegie-Mellon University, June 24, 2007.

Phase Reduction Methods and Application to Feedback-Controlled Deep Brain Stimulation, The Mathematics of Parkinson's Disease Mini-Symposium, SIAM Conference on Applications of Dynamical Systems, Snowbird UT, May 28, 2007.

Desynchronize This! Event-Based Feedback Control of Nonlinear Oscillators, IGERT Systems Biology Seminar, UC Santa Barbara, April 9, 2007.

Partial Phase Synchronization of Uncoupled Populations: An Application of Phase Reduction Methods, Theoretical Ecology Seminar, UC Santa Barbara, November 29, 2006.

Poster Sessions

Partial Phase Synchronization of Uncoupled Populations: An Application of Phase Reduction Methods, Selected for Poster Spotlight Presentation. Grand Challenges in Neural Computation: Measurement, Analysis, and Modeling of Cellular and Network Dynamics, Santa Fe NM, February 19-21, 2007.

Workshops Attended

Mathematical Sciences Research Institute Berkeley, CA
Introductory Workshop on Dynamical Systems with Emphasis on Extended Systems, January 22–26,2007.

Mathematical Biosciences Institute Ohio State University
Introduction to Mathematical Neuroscience, September 11–15,2006.

iSight South Bend, IN
Model Integration and Optimization Seminar, August 2004.

Integrated Engineering Software Cincinnati, OH
Boundary Element Electromagnetics Modeling Workshop, May 2004.

ANSOFT Detroit, MI
Electromagnetics Modeling Workshop, October 2003.

Awards and Honors

National Science Foundation IGERT Fellowship Winter 2007
Department of Mechanical Engineering, University of California Santa Barbara.

Walter and Margaret Pierce Scholarship Spring 2000
Department of Mechanical Engineering, University of Minnesota.

Institute of Technology Deans List Fall/1999–Winter/2002
Department of Mechanical Engineering, University of Minnesota.

Memberships Institute for Electrical and Electronics Engineers - Student Member, Control Systems Society
Society for Industrial and Applied Mathematics - Student Member, Dynamical Systems Activity Group