Chris McComb

PhD Candidate
Department of Mechanical Engineering
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Education

Carnegie Mellon University (2012 — Present)
Ph.D. Mechanical Engineering, *projected completion Spring 2016.*
M.S. Mechanical Engineering, *projected completion Spring 2014.*

California State University, Fresno (2007 — 2012)
B.S. Mechanical Engineering, *Summa Cum Laude*
B.S. Civil Engineering, *Summa Cum Laude*
Certificate in Co-Curricular Leadership

Professional Licensure

Engineer-In-Training, State of California, No. 139223, April 2010.

Experience

Research Assistant, Carnegie Mellon University
Team Problem Solving In Dynamic and Adversarial Environments
August 2012 — Present
This project attempts to gain insight into the way that decision-making teams solve problems that exhibit dynamic and adversarial qualities. Please see attached research statement for more information.

Teaching Assistant, Carnegie Mellon University
Graduate Numerical Methods
August 2013 — Present
As a teaching assistant for Graduate Numerical Methods, I grade assignments, hold regular office hours, and assist students in developing their final course projects. The course topics included numerical intergration, numerical differentiation, optimization, numerical solutions for ODEs, and many other topics.

Intern, National Renewable Energy Laboratory
Frequency Domain Analysis of Wave Energy Converters
May 2012 — August 2012
This project focused on the efficient simulation of wave energy converters. I developed a computational tool for modified frequency-domain analysis that readily allowed for the incorporation of nonlinear control strategies and nonlinear fluid interactions. This tool utilized WAMIT and MATLAB to allow for flexible simulations.

Undergraduate Research Assistant, California State University, Fresno
Enhancement of Shear Transfer in Composite Decks
May 2011 — May 2012
This project sought to demonstrate a method for increasing the strength of composite structural decks through the addition of mechanical fasteners. Both experimental and analytical results showed an increase in strength with the addition of these embedded fasteners.

Teaching Assistant, California State University, Fresno
Design of Steel Structures
January 2012 — May 2012
As a teaching assistant for Design of Steel Structures, I held weekly recitations that reviewed and emphasized critical concepts covered in lecture. The topics covered included design of tension members, columns, beams, connections, and design of members with combined loading.

Tutor, California State University, Fresno
Engineering Pathways Center
September 2011 — May 2012
As a tutor, I helped students in the Lyles College of Engineering to reach their full potential. I tutored courses in mathematics, physics, chemistry, civil engineering, mechanical engineering and electrical engineering. I also provided general advice on study skills and test-taking strategies.

Intern, National Renewable Energy Laboratory
Analysis of Wave Energy Converters in OpenFOAM
May 2011 — August 2011
Working within OpenFOAM (an opensource computational fluid dynamic program), I developed tools to aid in the simulation of wave energy converters. Specifically, I developed tools that made it possible to simulate power generation within a device, and the effects of mooring lines.

Intern, Brooks Ransom Associates
Structural Design and Drafting
September 2009 — May 2011
As an intern, I assisted with computer-aided design and drafting, design of structural systems, and the preparation of construction documents and calculation packages. I also created spreadsheets to automate and optimize design calculations.

Intern, California Department of Transportation
Maintenance Engineering Division
May 2008 — August 2009
I conducted field review, permit searches, right-of-way coordination and environmental coordination. My responsibilities also included preparation of plans, specifications, and estimates for transportation-related projects.

Publications

Journal Articles

McComb, C., Tehrani, F.M., "Enhancement of Shear Transfer in Composite Decks", Engineering Structures, **in review**

Conference Presentations

McComb, C., J. Cagan, and K. Kotovsky. "Quantitative Comparison of High- and Low-Performing Teams in a Design Task Subject to Drastic Changes." ASME IDETC - Design Theory and Methodology Conferenc, 2014.

Santaeufemia, P.S., N.G. Johnson, **C. McComb**, and K. Shimada, "Improving Irrigation in Remove Areas: Multi-objective Optimization of a Treadle Pump." ASME IDETC - Design Automation Conference, 2014.

McComb, C., F.M. Tehrani, "Research and Practice Group Methodology: A Case Study in Student Success." Proceedings of the 2014 ASEE Pacific-Southwest Conference, 2014.

McComb, C., M. Lawson, Y. Yu, "Development and Verification of a Wave Energy Converter Simulation Tool." Marine Energy Technology Symposium, 2013.

McComb, C., F.M. Tehrani, "Enhancement of Composite Decks." California State University Honors Conference, 2012.

McComb, C., M. Lawson, "Numerical Modeling of Wave Energy Converters in OpenFOAM." California State University Honors Conference, 2012.

Rath, L., C. Smith, Y. Karimi , **C. McComb**, M. Petrucci, D. Ward, "Sustaining Service through Student Voice." Continuums of Service Conference, 2011.

Awards & Honors

G. Sundback Graduate Fellowship, awarded February 2014
NSF Graduate Research Fellowship, awarded April 2013
Tau Beta Pi King Fellowship, awarded April 2012
Leon S. Peters Engineering Scholarship, awarded August 2010 and August 2011
California State University Presidents Scholarship, awarded May 2007
California Masonic Scholarship, awarded August 2007
Lyles College of Engineering Dean's Medalist, awarded April 2012
Eagle Scout, awarded November 2004

Affiliations and Memberships

Conference Submission Reviewer, Continuums of Service Conference, 2012-Present
Admissions Application Reviewer, Smittcamp Family Honors College, 2011-Present
Member, American Society of Mechanical Engineers, January 2013 — Present
Member, Tau Beta Pi, November 2008 — Present
  District Director, District 3 (Pennsylvania), June 2013 — Present
  Chief Advisor, PA-Gamma Chapter (Carnegie Mellon University), August 2012 — Present
  President, California Rho Chapter, December 2009 — May 2010
  Vice President, California Rho Chapter, May 2009 — December 2009
Member, Pi Tau Sigma, April 2010 — Present
  President, Beta Gamma Chapter, December 2010 — May 2011
  Vice President, Beta Gamma Chapter, May 2010 — December 2010
Member, Chi Epsilon (Civil Engineering Honors Society), April 2009 — Present