

MAE Seminar SERIES

HUMAN-CENTERED COMPUTATION FOR HIGH-PERFORMANCE TEAMS

ABSTRACT

This seminar will focus on empowering high-performance teams through the use of human-centered computing, a people-focused approach to the development of computational tools. Engineering and design are host to a variety of challenging problems that can benefit from computation and automation. There also exists substantial potential for integrating human and computational elements in hybrid teams that leverage that strengths of each to achieve superior performance. However, best practices for achieving this integration are sparse, and our understanding of hybrid teams evolves as new insights about teamwork and intelligent systems emerge. This seminar will explore three interrelated areas of research. The first topic will focus on using simulation to better understand design teams and organizations, including recent work on modeling cognitive style. The second topic will explore the use of machine learning to create intelligent computational tools that can support and augment the abilities of designers. The final portion of the seminar will explore how the first two areas can be combined to support the development of hybrid human-machine teams.

BIO SKETCH

Christopher McComb is an Assistant Professor in the School of Engineering Design, Technology, and Professional Programs (SEDTPP) at Penn State University, where he leads the Technology and Humans Research in Engineering Design (THRED) Group. He is also affiliated with the Department of Mechanical Engineering, the Department of Industrial and Manufacturing Engineering, the Institute for Computation and Data Sciences, and the Stuckeman Center for Design Computing. McComb has published over 60 peer-reviewed articles and is PI or Co-PI on more than \$10 million of funding. He attended California State University-Fresno and received dual B.S. degrees in Civil and Mechanical Engineering. He later attended Carnegie Mellon University as a National Science Foundation Graduate Research Fellow and obtained his M.S. and Ph.D. in Mechanical Engineering. His research interests include team-based design and engineering methodologies, machine learning for engineering design, and STEM education, with support from DARPA, NSF, private corporations, and industry consortia. McComb teaches courses in multidisciplinary product design, decision-making, data-driven engineering, and design fundamentals.



Dr. Christopher McComb

Assistant Professor of Engineering Design

School of Engineering Design,
Technology, and Professional Programs

The Pennsylvania State University



University at Buffalo

Department of Mechanical
and Aerospace Engineering

School of Engineering and Applied Sciences

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1949-2019