DEPARTMENT OF BIOLOGICAL SCIENCES

SEMINAR SERIES

Dr. Christopher Bystroff
Professor

"Evangelizing the human population problem: dynamic systems from global to molecular"

Monday, April 2, 2018
12:00 Noon
CBIS, Bruggeman Room

REFRESHMENTS SERVED 11:45
“Advanced Wind Engineering: Changing Climates, Aerodynamics and Dynamics”

Wednesday, April 4, 2018

JEC 3117

1:00 – 2:00

Dr. Teng Wu

Assistant Professor, University at Buffalo

ABSTRACT:

Mitigation of losses due to wind hazards has become an increasingly urgent and challenging problem in light of our changing climates. The assurance of structural safety and reliability under extreme winds requires accurate modeling of wind-induced effects. It heavily relies on our understanding of the nature of tropical cyclone and non-synoptic winds (characteristics of wind inputs), the bluff-body aerodynamics (from wind inputs to load outputs) and the characterization and quantification of structural vibrations under winds and their mitigation (from wind load inputs to structural response outputs), which are current research focuses of the Wind Group at University at Buffalo. This presentation will introduce some efforts made by us on the consideration of the nonstationary winds, nonlinear aerodynamics and nonlinear structural dynamics in the simulation of wind-induced effects on civil infrastructures. Three topics will be covered: (a) Rapid estimate of tropical cyclone (hurricane) wind and rain fields under changing climates; (b) Analysis and synthesis of nonstationary winds under non-synoptic events (downbursts and tornadoes); and (c) Simulation of transient wind effects on structural aerodynamics.

BIOGRAPHY: Dr. Teng Wu received his Ph.D. degree from University of Notre Dame in 2013. Wu has made significant contributions to development of analytical and computational methods focusing on nonlinear and unsteady features of structural aerodynamics. His contributions have been recognized through the 2013 American Society of Civil Engineers (ASCE) O.H. Ammann Research Fellowship, 2014 American Association for Wind Engineering (AAWE) Best Paper Award, 2016
ASCE Alfred Noble Prize, 2017 AIAWE Robert Scanlan Award and 2017 International Association for Wind Engineering (IAWE) Junior Award. Wu currently serves as the Associate Editor of ASCE Journal of Bridge Engineering and Frontiers in Built Environment-Wind Engineering and Science. He also serves on a number of ASCE committees including Wind Engineering Division’s Structural Wind Engineering Committee and ASCE Standards Committee ASCE 49 – Wind Tunnel Testing for Buildings and Other Structures. He is a member of Super-Long-Span Bridge Aerodynamics Working Group of International Association for Bridge and Structural Engineering (IABSE). Since joining UB, Wu have demonstrated his capability to obtain funds from Federal and State levels in United States and through International collaborations. He is currently in collaboration with more than 15 national and international institutions. Wu has authored more than 40 articles published in highly respected journals of structural/wind engineering fields, and presented more than 50 conference papers.
Massive-Scale Analytics

Abstract:
Emerging real-world graph problems include: detecting community structure in large social networks; improving the resilience of the electric power grid; and detecting and preventing disease in human populations. Unlike traditional applications in computational science and engineering, solving these problems at scale often raises new challenges because of the sparsity and lack of locality in the data, the need for additional research on scalable algorithms and development of frameworks for solving these problems on high performance computers, and the need for improved models that also capture the noise and bias inherent in the torrential data streams. In this talk, the speaker will discuss the opportunities and challenges in massive data-intensive computing for applications in computational science and engineering.

Biography:
David A. Bader is Professor and Chair of the School of Computational Science and Engineering, College of Computing, at Georgia Institute of Technology. He is a Fellow of the IEEE and AAAS and served on the White House's National Strategic Computing Initiative (NSCI) panel. Dr. Bader served as a board member of the Computing Research Association, on the NSF Advisory Committee on Cyberinfrastructure, on the Council on Competitiveness High Performance Computing Advisory Committee, on the IEEE Computer Society Board of Governors, on the Steering Committees of the IPDPS and HiPC conferences, and as editor-in-chief of IEEE Transactions on Parallel and Distributed Systems, and is a National Science Foundation CAREER Award recipient. Dr. Bader is a leading expert in data sciences. His interests are at the intersection of high-performance computing and real-world applications, including cybersecurity, massive-scale analytics, and computational genomics, and he has co-authored over 210 articles in peer-reviewed journals and conferences. During his career, Dr. Bader has served as PI/coPI of over $180M of competitive awards. Dr. Bader has served as a lead scientist in several DARPA programs including High Productivity Computing Systems (HPCS) with IBM PERCS, Ubiquitous High Performance Computing (UHPC) with NVIDIA ECHELON, Anomaly Detection at Multiple Scales (ADAMS), Power Efficiency Revolution For Embedded Computing Technologies (PERFECT), and Hierarchical Identify Verify Exploit (HIVE). He has also served as Director of the Sony-Toshiba-IBM Center of Competence for the Cell Broadband Engine Processor. Bader is a co-founder of the Graph500 List for benchmarking "Big Data" computing platforms. Bader is recognized as a "RockStar" of High Performance Computing by InsideHPC and as HPCwire's People to Watch in 2012 and 2014. Dr. Bader also serves as an associate editor for several high impact publications including IEEE Transactions on Computers, ACM Transactions on Parallel Computing, and ACM Journal of Experimental Algorithmics. He successfully launched his school's Strategic Partnership Program in 2015, whose partners include Accenture, Booz Allen Hamilton, Cray, IBM, Keysight Technologies, LexisNexis, Northrop Grumman, NVIDIA, and Yahoo; as well as the National Security Agency, Sandia National Laboratories, Pacific Northwest National Laboratory, and Oak Ridge National Laboratory.
“Designing Wonder—
Exploring the Intersection of Magic and Design”
Andrew Evans

ABSTRACT: Magic seeks to create impossible moments on stage, Design seeks to create new, seemingly impossible experiences for people in the world. With such similar agendas, how might these two disciplines learn from each other to push beyond their respective limits? Andrew will discuss real world examples and approaches to both Magic and Design, and students will learn practical applications for how magic can inspire their design work.

BIO: Andrew Evans is a professional illusionist and magic designer who brings a modern, innovative twist to magic. He founded The Magic Patio—a magic speakeasy tucked in a corner of San Francisco—and his background in engineering and design helps him create unique illusions that have impressed audiences on 6 continents (come on Antarctica!). When he’s not on stage, Andrew is a Product Design Lead at IDEO and a Lecturer at the Stanford School. He holds a B.A. is Engineering from Brown University and an M.S. in Product Design from Stanford University.

“Metric-based approach to engineering management-Electrical Construction”
Jumie Yuventi

ABSTRACT: As a doctoral candidate Jumie was interested in implementing automated engineering-through-fabrication in electrical construction projects. However, although technically feasible, there were several organizational dynamics that retard such radical innovations. In this discussion Jumie speaks about some of these suboptimal dynamics many of which is not limited to the construction industry. He also speaks about the work he performed with Dr. Stanley Weiss to re-appropriated Systems Engineering constructs proven in aerospace and car manufacturing to address these issues. The resulting metric-based approach to engineering and decision-making constructs have since been used in multiple actual project pipelines and ultimately pave the way for early stages of design automation.

BIO: Jumie Yuventi develops technologies and processes that provide explicit utility. He has worked in multiple industries including high-tech, software, manufacturing, and construction having key roles in Engineering, Management, Business Development, and Product Development. Jumie Yuventi holds a Doctorate in Engineering Management and a Master's degree in Electrical Engineering both from Stanford University. He also holds a Bachelor's degree in Electrical Engineering and Applied Mathematics from City University of New York. Jumie has first-authored a dozen peer reviewed publications and book chapters during his PhD on topics such as organizational dynamics, complex decision making, algorithmic thinking education, and electrical engineering.