**BSOMADA 2023**

**9/2/2023 5:30 pm – 9:30 pm Pacific Time**

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Talk 1: Christopher Califf

Associate Professor, Department of Decision Sciences, Western Washington University

Title: Unveiling the Strength of Digital Objects: The Impact of the Digital Object Concept on Technology Acceptance

Abstract: Research in developmental psychology suggests that humans possess innate cognitive principles that shape how we make sense of objects: cohesion, continuity, and contact. This paper applies these ideas to information systems (IS) research to introduce the digital object concept framework and scale. Grounded in Spelke's core knowledge theory, the framework identifies three principles (digital object cohesion, digital object continuity, and digital object contact) that shape individuals' understanding of digital objects. To measure the strength of individuals’ digital object concepts, a scale was developed. The scale was tested in relation to perceived usefulness, ease of use, and intention to use, revealing positive and significant relationships. This study enhances the understanding of cognitive processes in technology usage and provides a valuable lens and measurement tool for IS researchers to use in multiple research streams. IS professionals can use this paper to help identify strong and weak digital object concepts in employees.



Short-Bio: Christopher B. Califf is an associate professor of information systems (IS) in the Department of Decision Sciences at Western Washington University. Chris's research covers a variety of topics on the interplay between technology and human behavior. His research has been published in outlets such as MIS Quarterly, Information & Organization, MIS Quarterly Executive, Journal of Information Technology, The Data Base for Advances in Information Systems (forthcoming), AIS Transactions on Human-Computer Interaction, Computers & Education, and the London School of Economics (LSE) Business Review, among others, and in conference proceedings including the International Conference on Information Systems, Americas Conference on Information Systems, and Hawaii International Conference on System Sciences. Chris serves as a co-chair or associate editor for several IS conference tracks and regularly reviews for many IS journals.

Talk 2: Haotao Li

Haitao Li, Ph.D.

Professor and Chair, Supply Chain & Analytics Department

University of Missouri – St. Louis

Title: Optimization Applications in Agriculture and Food Supply Chains

Agriculture and food supply chains are complex systems with unique characteristics, e.g., seasonality, perishability, and uncertainty. Decision-making for purchasing, production, distribution, and delivery at all strategic, tactical and operational levels often calls for optimization methodologies. In this talk, I first provide an overview of the issues and decision needs in agriculture and food supply chains, with a conceptual hierarchical optimization framework to simultaneously address multiple performance metrics of efficiency, safety, equity, resilience, and sustainability. I then showcase three applications of mathematical programming on indoor farming supply chain network design, grape supply chain configuration, and vehicle routing for grocery store delivery.



Short-Bio: Haitao Li is Professor and Chair of the Supply Chain & Analytics Department, and Founding Director of Laboratory of Advanced Supply Chain Analytics (LASCA) at University of Missouri – St Louis (UMSL). He holds his Ph.D. degree in Operations Management (2005), Master of Arts in Economics (2002) from University of Mississippi, and Bachelor of Engineering in Foreign Trade in Industry with a minor in Aeronautical Engineering from Beijing University of Aeronautics and Astronautics, P.R. China (2000). Dr. Li’s research interests focus on optimization modeling, algorithm design, and their applications in the broad domain of supply chains, including supply chain network design, supply chain configuration, research allocation, project scheduling and vehicle routing. His projects have been sponsored by the US Army Research Office, Department of Transportation, and National Science Foundation, as well as companies and organizations in the private sector including HP Labs, Express Scripts Inc., Ameren Corp., and Association of Supply Chain Management (ASCM). Dr. Li was a recipient of the Douglas Durand Award for Research Excellence of UMSL in 2015. With two U.S. Patent applications and a number of invention disclosures, he was named 2015 UMSL Inventor of The Year. Dr. Li currently serves as Associate Editor of the Journal of the Operational Research Society and Transportation Journal, and Editorial Board member of the International Journal of Project Management.

Talk 3: Hao Huang

Assistant Professor in the Department of Industrial Engineering and Management at the Yuan Ze University. Title: Level Set Approximation for Discrete Simulation Optimization with Stochastic Constraints

Abstract: This paper focuses on the identification of a level set of near-optimal solutions within a specific quantile, such as the top 10%, for a simulation optimization problem. The simulation optimization problem has two major challenges. Firstly, the objective function and multiple constraint functions cannot be analytically evaluated, necessitating the use of stochastic simulation for estimation. Secondly, the problem involves a discrete solution space that may be potentially infinite. To tackle these challenges, we propose two innovative frameworks. The first framework employs a probabilistic branch-and-bound algorithm to systematically search for a level set of solutions, disregarding stochastic constraints. The second framework combines a penalty function approach with a probabilistic branch-and-bound algorithm to effectively handle stochastically constrained problems. In addition to presenting these frameworks, we provide a thorough convergence analysis for both algorithms. Our experimental results demonstrate the exceptional efficiency and effectiveness of the proposed algorithms, surpassing existing approaches.

Co-authored with Hao Huang Department of Industrial Engineering and Management, Yuan Ze University No.135, Yuandong Road, Taoyuan City, Taiwan haohuang@saturn.yzu.edu.tw



Short-Bio: HAO HUANG is an Assistant Professor in the Department of Industrial Engineering and Management at the Yuan Ze University. His Ph.D. degree is from the University of Washington in Industrial and Systems Engi neering. His research interests include simulation optimization, simulation modeling, data analysis, and ap plications in Manufacturing and Healthcare Management. His email address is haohuang@saturn.yzu.edu.tw and his website is <https://www.iem.yzu.edu.tw/labfile/Simulation/English-members.html>.

Talk 4:

Title: Focus programming: an alterative bi-level programming approach to static stochastic optimization problems

Presenters: Peijun Guo

Faculty of Business Administration, Yokohama National University, Japan.

Abstract: Static stochastic optimization problems are formulated with the focus theory of choice where the optimal solution is determined as per which solution's focus (the most salient realization of a random vector) is the most preferred. The new formulation that we call the focus programming is a bi‐level programming approach in which the lower‐level program is used to choose the focus of each feasible solution and the upper‐level program is to determine the optimal solution. Since in focus programming models upper‐level and lower‐level programs are maximin or minimax problems, they are nonsmooth and sometimes even nonconvex so that the existing optimization methods cannot solve such bi‐level programming problems. We propose several single‐level reformulation methods for such problems. This is a joint work with Dr. Xide Zhu.



Dr. Peijun Guo is Professor of Decision Sciences, Faculty of Business Administration, Yokohama National University, Japan. He received the BE, ME and PhD in 1990, 1993 and 1996, respectively, all from Dalian University of Technology and the PhD in 2000 from Osaka Prefecture University majoring in industrial engineering supported by the Japanese government scholarship. His research interests involve operation research and management science, mainly in decision analysis under uncertainty. He proposes Focus Theory of Choice which models and axiomatizes a decision-making procedure under risk and uncertainty. Based on the focus theory of choice, he proposes dynamic focus programming for sequential decision problems under uncertainty and the focus programming for static stochastic optimization problems (with Xide Zhu). Prof. Guo is an Associate Editor of Information Sciences and the Editorial Board Members of several International Journals.