



## Greetings,



Welcome to Fall 2023! I am truly honored and excited to be selected as Head of School of Industrial Engineering and Management (IEM) and the Donald & Cathey Humphreys Chair at Oklahoma State University (OSU). First, I would like to thank Dr. Sunderesh Heragu for his leadership as IEM school head for 9 years and Dr. Camille Deyong as the interim head last year.

I started this role on June 30, 2023 and it has been great transitioning to this new role! Before my tenure at Oklahoma State University, I have been on the faculty of Department of Industrial and Manufacturing Systems Engineering at Iowa State University since 2009. My research focuses on operations research and data analytics with applications in supply chain design, manufacturing production, renewable energy systems, and sustainable agriculture. My research has been supported by NSF, USDA, DOE, and DOD with over \$11.5M funding, resulting in about 100 journal articles and 50 conference proceedings with 3700+ citations. In addition, I have also served in various capacities at professional organizations including Institute of Industrial and Systems Engineers (IISE) and Institute for Operations Research and Management Sciences (INFORMS).

This is an exciting time for IEM at OSU as we update our strategic plan in response to OSU and college strategic planning and launch departmental initiatives. More importantly, we would like to hear from you on your thoughts and ideas to take IEM to the next level. I look forward to meeting you all in person! Go Pokes!

**- Dr. Guiping Hu**

## ***Dr. Chenang Liu's new NSF project: Improving Inhaler Design and Efficacy with a Novel AI-assisted Digital Human Testing Platform***

The overall goal of this project is to develop a first-of-its-kind, user-friendly and trustworthy virtual human testing platform that can quantify the inhaler performance in a low-risk, time-saving, disease-specific, and patient-specific fashion, thereby accelerating inhaler innovation with enhanced drug delivery efficiency to designated lung sites. This innovation is of great importance to pharmaceutical companies and medical device design companies, especially for the chronic obstructive pulmonary disease (COPD) treatment as well as other chronic lung diseases. By providing a reliable and comprehensive virtual testing environment, this all-in-one virtual human testing platform stands to accelerate the development and refinement of inhaler technology, ultimately benefiting patients suffering from respiratory conditions, since it can potentially achieve targeted drug delivery to the deeply undertreated small airways with optimal therapeutic outcomes and minimized side effects.





**Dr. Akash Deep's new project: *Research on Data Science and Machine Learning for Business Process Improvement and Automation***



**Dr. Paritosh Ramanan has been selected as the lead track chair 2024 IISE Annual Conference Energy Systems Division**

**Maral Shahmizad and Dr. Austin Buchanan of IEM receive Honorable Mention Poster award at IPCO Conference**



Maral Shahmizad, a Ph.D. student in Industrial Engineering and Management (IEM), and Dr. Austin Buchanan, associate professor of IEM, received an Honorable Mention Poster Award for Maral's poster presentation: *Political Districting to Minimize County Splits* at the 24th Integer Programming and Combinatorial Optimization (IPCO) conference.

**Ainsley Kyle and Dr. Katie Jurewicz at International Conference of Human Interactions and Emerging Technologies at Université D'Cote Azur in Nice France**



**Ainsley (left) was presented the Lynn E. Bussey Scholarship**

**IEM alum Lauren Millis visits IEM department**



## **EPSTEIN INSTITUTE SEMINAR ▪ ISE 651**

### **Improving Human-System Interaction via Wearable Physiological Monitoring**

**ABSTRACT** – Advances in wearable sensor technology can be leveraged to assess and predict human physiological states during human interaction with systems. Sensor data recorded from the brain and/or other parts of the human body, including the eyes and heart, enable understanding of the mechanisms underlying perceptual, cognitive, and motor functioning in operational environments. This presentation considers two recent studies. The first study investigated the effect of recurrent task-induced acute stress on task performance, vagally mediated heart variability measures, and task-evoked pupillary response. The second study employed minimum spanning tree analysis, an unbiased graph theory approach, to quantify changes in brain network organization during the performance of a load-varying working memory task. These studies demonstrate the utility of physiological monitoring in the design, development, and assessment of cyber-physical systems to enhance productivity, safety, and health.



**Dr. Joseph Nuamah**

Assistant Professor, School of Industrial Engineering and Management;  
Director of the Neuroergonomics and Cognitive Engineering Laboratory,  
Oklahoma State University

**SPEAKER BIO** – Dr. Joseph Nuamah is currently an Assistant Professor at the School of Industrial Engineering and Management, and Director of the Neuroergonomics and Cognitive Engineering Laboratory at Oklahoma State University. His research interests center around understanding neural, physiological, and behavioral mechanisms underlying human-system interactions. Dr. Nuamah’s work has appeared in several journals including *Brain-Computer Interfaces*, *Human Factors*, *IEEE Transactions on Human-Machine Systems*, and *Frontiers in Human Neuroscience*. His research is funded by the NSF.

Dr. Guiping Hu discussed the future of industrial discipline with IEM sophomores



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