Letter from the Department Head

Greetings from the School of Industrial Engineering and Management (IEM) at Oklahoma State University! I hope everyone had a great holiday break with family and friends. Happy New Year!

As we look back on the fall 2024 semester, we have a lot of achievements to celebrate. I invite you to check out our fall 2024 newsletter below. As we look forward to spring 2025, we have a lot of departmental events and initiatives to look forward to, including the inaugural Kenneth E. Case society banquet and IEM award celebration. I appreciate the dedication from our IEM faculty and staff; I appreciate the energy from our undergraduate and graduate students; I appreciate the support from our IEM alumni and friends.

I wish everyone a happy and prosperous 2025. Please stay engaged and provide inputs on how we can take IEM at OSU to the next level.

Go Pokes!

CEAT professors aim to improve health and productivity of dairy cows

Dr. Guiping Hu and Dr. Lizhi Wang were awarded funds from Bovita Labs, a subsidiary of Select Milk Producers to create an integrated data set to lay groundwork for several follow up research and development opportunities to improve overall health and productivity of cows.

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Dr. Hu named ELATES Fellow in National Leadership Program

Dr. Hu named ELATES Fellow in National Leadership Program. The class of 2024-2025 Fellows is a prestegious cohort of 46 faculty members from over 35 institutions of higher education across the U.S. and Canada.

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Two OSU engineering professors receive NSF EAGER award

Dr. Paritosh Ramanan, assistant professor of industrial engineering and management, and Dr. Zheyu Jiang, assistant professor of chemical engineering, were recently awarded the National Science Foundation EAGER award.

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AI-Enhanced Risk Assessment

Dr. Chenang Liu was awarded an NSF grant for his project titled "AI-Enhanced Risk Assessment for Mitigating Indoor Viral Transmission in Public Schools".

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CEAT's Kyle pursuing third industrial engineering and management degree

IEM student Ainsley Kyle just can't get enough of CEAT! She is currently pursuing her third degree in IEM

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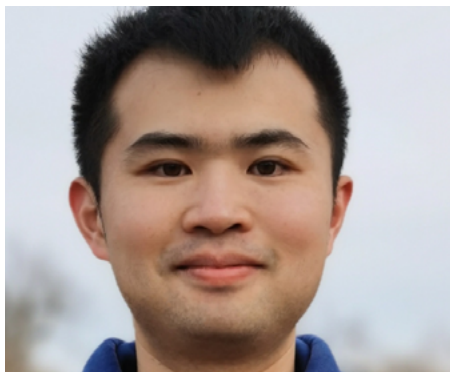## OSU Global brings international alumni together to reminisce and build connections

Dr. Hu and Dr. Wang traveled to Bali for an alumni gathering to enhance the strong relationship with our international alumni in Southeast Asia.

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The Cowboy Academy

On September 5, the Cowboy Academy (TCA) had a great gathering and discussions on strategies to enrich our education, research, and service missions. The Industrial Advisory Board (IAB) focused on our senior design project and undergraduate curriculum along with strategies to strengthen industrial engagement.

Idea Accelerator cohort by Builders + Backers

Dr. Yu Feng's lab and Dr. Chenang Liu's lab have been accepted as a Builder in the Fall 2024 Idea Accelerator cohort by Builders + Backers!

The opportunity to develop and refine our idea, an AI-powered smart inhaler designed to optimize and personalize pulmonary drug delivery, is truly exciting. This innovation aims to improve therapeutic outcomes for patients with lung diseases like asthma and COPD by ensuring that medication is precisely delivered to targeted areas of the lungs.

A big thank you to Builders + Backers and the sponsors of this cohort for this incredible opportunity! We are looking forward to learning, growing, and pushing the boundaries of pulmonary healthcare through advanced technology, computational modeling, and AI.

Great thanks to John Nickel for the constructive discussion to shape this application. Very grateful for Canopy Healthtech, Rachel Lane Ph.D., and RD Stacie Pace MHA for the previous funds to help us reach the current stage!

The Cowboy Academy newly inducted members

Congratulations to our newly inducted Cowboy Academy members: Akshar Awalgaonkar, Brian Adams, Stephanie Criner, Camille DeYong, Denay Huddleston and Steven Welch.

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CEAT Seniors of Significance Award

Eight College of Engineering, Architecture and Technology students, including two IEM students (Loryn Grace Hendrix and Colleen Stegmann) have been selected as Oklahoma State University Seniors of Significance for the 2024-2025 academic year by the OSU Alumni Association. The Seniors of Significance Award recognizes students who truly exemplify and embody the Cowboy Code, which honors the University's land-grant mission and commends academic achievements, character and personal impact. A ceremony recognizing this year's Seniors of Significance will was held on Nov. 5, 2024 at the ConocoPhillips OSU Alumni Center.

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CEAT Collaborative Circle

On September 18, IEM hosted the first C3 (CEAT Collaborative Circle) event. C3 is an initiative to promote interdisciplinary research and education collaborations and collegiality within schools and across schools within the college.

Study Published examining the effects of stresses on algae cells during 3D bioprinting

Ph.D. student Shihab Shakur, advised by Prof. Sri Ramesh, along with collaborators from the University of Florida and the University of California, Riverside, has published a study examining the effects of stresses on algae cells during 3D bioprinting. The team explored whether algae cells could be alive but unable to perform their essential functions after printing - something that is not currently well understood, but crucial for process planning. They found that while the cells may survive, their ability to function properly declines under stress levels much lower than those required to kill them. At higher stress, both their survival and functionality are affected. This new insight is crucial for improving 3D printing processes used for immobilizing algae, particularly in environmental applications such as water purification and biofuel production.

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CEAT Professor and students paper accepted at Election Law Journal

Dr. Austin Buchanan and Ph.D students Soraya Ezazipour and Maral Shahmizad just had their paper accepted at Election Law Journal. "Usually, we publish our methodological districting work in OR/MS journals. This is the first time for us to publish in a law journal". The paper shows that a widespread belief among districting experts (that has made it all the way to Supreme Court oral arguments) is wrong.

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Finding conserved low-diameter subgraphs in social and biological networks

Dr. Baski Balasundaram

The paper entitled "Finding conserved low-diameter subgraphs in social and biological networks" co-authored by former IEM Ph.D. students Drs. Hao Pan and Yajun Lu with Drs. Balasundaram and Borrero will appear in the next issue of the Wiley Journal Networks. The paper is based on Dr. Pan's dissertation research on designing effective algorithms of detecting tightly knit communities or clusters conserved across multiple networks. These networks could represent an interconnected system evolving over time or correlations between entities observed under different circumstances or experimental conditions. These ideas are applicable in diverse fields like cross-market customer segmentation to find customers who have similar behaviors across different markets and systems biology to find groups of co-expressing genes or interacting proteins that are conserved under different biological conditions or between different species.
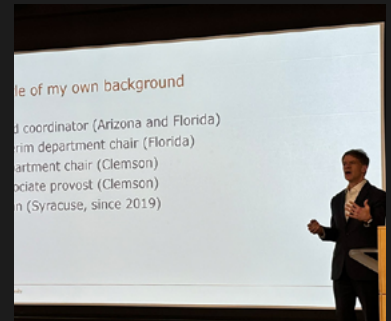
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Dr. Paritosh Ramanan is researching decentralized cyberattack detection methods

There are arguably no assets more important than critical infrastructure networks, making the data they collect all the more valuable. From the energy and transportation sectors to emergency services and health care, data in critical infrastructure sectors is an ideal target of cybercriminals. When critical infrastructure networks are hit by a cyberattack, it can lead to detrimental impacts across the entire network due to the physical and operational interdependence of stakeholders. Most of these networks require centralized data aggregation and computation, an area that researchers in the College of Engineering, Architecture and Technology at Oklahoma State University are trying to tackle.

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C3 and CEAT Leaders Seminar

November 20 saw another successful C3 meeting to discuss research and collaboration. Presenting their research were Dr. Lizhi Wang and Dr. Akash Deep.

The 20th also saw a CEAT Leaders Seminar given by Dr. J. Cole Smith. His talk on 'Engineering Leadership and Research: From College Transformation to the Diversion Path Problem' was attended by IEM students and Faculty.

Best Student–Authored Research Proposal Award

Sachithra Karunathilake, a Ph.D. student in the CoPe lab, received the HFES Training Technical Group's "Best Student-Authored Research Proposal Award". Sach's dissertation work focuses on exploring the skill acquisition continuum of surgical residents and understanding the factors shaping novice-to-expert progression.

Regents Distinguished Teaching Award

Dr. Jennifer Glenn, teaching associate professor of IEM, was awarded the Regents Distinguished Teaching Award. This award recognizes faculty who have shown unusually significant achievement in the instruction of students for an extended number of years.

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Soldier Touchpoint Research Center ribbon cutting

Dr. Katie Jurewicz attended the ribbon cutting for the Soldier Touchpoint Research Center (STRC) at the FISTA Innovation Park in Lawton, OK, with Dr. Ryan Paul from MAE, Torch Technologies, FISTA Board Members, and Congressman Tom Cole. The STRC is a collaborative effort between OSU and Torch to perform human factors research in the defense industry. Establishing the lab in Lawton allows the researchers to work closely with the Army community in Lawton-Ft. Sill to develop human-centered systems that are designed around the warfighter. Several IEM students are working on this effort including Logan Davis (MS), Ainsley Kyle (PhD), Matthew Nare (PhD) under the direction of Dr. Katie Jurewicz.

Undergraduate Research Scholarship from OSU CEAT

Connor Meissner received the "Undergraduate Research Scholarship" from OSU CEAT. With this scholarship, Connor will investigate how physically demanding careers impact an individual's cognitive workload.