Oklahoma State University

School of Industrial Engineering and Management

College of
Engineering, Architecture and Technology

COWBOY CONNECTIONS

FALL 2021

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Dr. Sunderesh S. Heragu
School Head
Regents Professor and
Humphreys Chair

Dr. Farzad Yousefian
Undergraduate
Program Director
Associate Professor

Dr. Tieming Liu
Graduate Program
Director
Associate Professor

Greetings!

As we approach the end of another semester and a year, we have much to be thankful for.

We had a large graduating class in the Spring and more will be graduating in a few weeks. See pages 44 and 45 for a list of the graduating seniors and the senior design projects they are working on.

We had an in-person commencement in May and will have another on December 11. The perseverance of these graduates who weathered the COVID-19 storm and powered through to completion is commendable. With more people vaccinated and getting their booster shots, life is returning to a level of normalcy not seen since early 2020. In fact, when I walked through the student union to meet an alumnus and his wife (who have generously endowed a large scholarship), I thought to myself that life was returning to normal. The level of activity in the union, the hustle and bustle around the food court, people working on their laptops or chatting with their friends felt like the pandemic is behind us. This is in large part because more than 13,000 OSU-Stillwater students and 4,000 faculty as well as staff have been fully vaccinated. The only way we can put the pandemic behind us is to encourage those amongst us who are still not vaccinated or fully vaccinated to get a jab or two as soon as possible, especially with the holidays and winter months approaching.

Our faculty have been successful in garnering federally competitive research grants. In fewer than five years, i.e., since 2016, our faculty have won five National Science Foundation (NSF) grants, including two NSF CAREER grants; one Office of Naval Research (ONR) grant; and recently on National Institute of Health (NIH) R01 grant. We recently received word that a new NSF and a new ONR proposal will be funded. Congratulations to all our faculty in securing the above and other awards from industry and other state/federal sources. See pages 38 and 39 for a listing of all the grants that are or were active in the 2019-2021 period.

The scholarship productivity of our faculty has also been spectacular. Our twelve tenured or tenure-track faculty have published almost 60 journal papers in the past three calendar years! The journals we have published in are some of the leading journals in the field.

Our students continue to amaze us. See a sample of our students who are spotlighted on pages 6 through 9. We welcomed 23 international students into our master's program in 2021 – another indication life is returning to normal. While five doctoral students have graduated, we also welcomed five new doctoral students.

We had a successful ABET review and hope to receive full accreditation after the ABET commission meets in July 2022. Special thanks to the alumni, employers, faculty, industrial advisory board (IAB), staff, and students for the critical role they played in the assessment process. The IAB is as active as ever in mentoring senior design students, organizing workshops for them, engaging with faculty, providing scholarship to students, and involved in so many ways to advance IEM. I am deeply grateful for the efforts the IAB undertakes to make IEM a highly ranked school in the nation. Brian Adams, Chair-elect of the IAB, is featured on page 14.

The Cowboy Academy of Industrial Engineering and Management (TCA) also has been hard at work, under the able leadership of Mitch Myers. Mitch concluded his term as President after serving in that role for two years. He was instrumental in pursuing several new initiatives – establishing sound processes for four subcommittees; initiating a TCA scholarship; bringing in new members; holding elections; and in a myriad of ways. I will need a full booklet to list all the things he has done at a critical time to ensure TCA grew and established strong roots so it can be a powerful force for the advancement of IEM for years to come. He had a full complement of volunteers who helped him pursue his goals. On behalf of IEM, I am grateful to Mitch and the entire TCA (now with 80 members) for all they have done. Ten new members were inducted on September 24. See page 31. Jack Goertz assumed leadership at the September meeting, and we look forward to his contributions. Jack has ambitious plans, and we stand ready to support him in his efforts.

I am proud to share that three of our alumni were recognized at the CEAT (College of Engineering, Architecture and Technology) Hall of Fame. See the accomplishments of Lee Blank, Tom Britton, and Stan Stephenson on pages 18-23. In addition, Lee also received the Lohmann award. Congratulations Lee, Tom, and Stan!

Kylie Dowers, a graduating senior is one of five CEAT seniors and one of twenty OSU seniors to be recognized as an outstanding Senior of Significance. Congratulation Kylie! Our faculty and other students have also won major awards, and these are listed in pages 17, 23-24, and 26.

Our seminar series has been in full swing thanks to Dr. Joseph Nuamah, with all the seminars conducted virtually. See page 32 for the list of speakers in fall 2021.

The APM, ASCM, INFORMS, and IISE student chapters have been very active, and I encourage you to read their report on pages 34-37. The OSU IISE student chapter will host the 2022 IISE South Central regional conference and we look forward to hosting ISE students from Arkansas, Kansas, Missouri, Oklahoma, and Texas between February 24-26, 2022!

I will conclude by expressing my deepest appreciation to alumni and friends for their generous support of the IEM program through their scholarships and general donations. A listing of all IEM scholarships and endowed professorships is included in pages 15 and 16 and donors in the past five years are also listed in page 33.

As we approach the end of the year, we appeal to all our alumni and friends to consider contributing to the IEM Excellence fund or the IEM Scholarship fund.

Go Pokes!
Sunderesh S. Heragu
School Head, Regents Professor, and Humphreys Chair

IEM Mission, Vision, and Goals

Vision
To inspire and empower our students to become leaders in a wide variety of industries, improve the quality of life for humankind, and change the world for the better, by making societal systems diverse, effective, efficient, and sustainable.

Mission
Continuously and aggressively advance educational and research processes which will attract students who fulfill our vision.

Educational Goal
Continue to improve, monitor, and enhance the student recruitment, learning, graduation, and placement processes to produce leaders proficient in theoretical, applied, and technology relevant concepts and practices that have a global reach and global impact.

Research Goal
Engage in cutting edge research of global importance to produce innovators and next generation engineering, education, and societal leaders.

Outreach Goal
Actively engage in community projects, economic development and service for the greater good. Enhance IEM's image internally within CEAT and OSU, and externally - the world at large.

Diversity Goal
Ensure that all school activities promote a diverse, achievement driven and gifted student experience. Administer programs to recognize the diverse challenges of each identity group and improve the retention rate from admission to graduation.

The Next Five Generations

IEM has been fortunate to have had the resources and the support that have made it possible to recruit, train, and produce leaders in our society. To benefit the next five generations, we launched a $20 million by 2020 campaign in December 2014 and have made good progress toward that goal. From $2.4 million in Fall 2013, our endowments (including deferred gifts) have risen to $8 million. The remaining $12 million must be raised in the next few years. The School of Industrial Engineering and Management looks to alumni and friends, like you, who make the next steps in our innovative future possible. We appreciate every donation, big or small, that supports our school. However, we have listed below several priorities for you to make the most impact.

Study Abroad Scholarship | $2,000 per student
Scholarships can be awarded to up to 12 students

Annual contribution to two IEM billboards | $15,000 per year

Sponsorship of IEM networking events | $25,000

Annual sponsorship of student travel | $40,000
IISE conferences, INFORMS conferences, commencement lunches, IAB-student luncheons and IEM reception at annual IISE meeting

Annual sponsorship of the weekly seminar series with a naming opportunity | $75,000

Endowing a professorship | $500,000

Endowing a chaired professorship | $1,000,000

Naming and endowing opportunity of IEM | $8,500,000

If you wish to donate, please send a check payable to the "Industrial Engineering and Management Excellence Fund" at Oklahoma State University, 354 Engineering North, Stillwater, OK 74078 or make a gift online by clicking the GIVE button at ceat.okstate.edu/iem.

For more information please contact
Bryce Killingsworth – Associate Development Director
Office: 405-385-5623
Cell: 405-385-3497
Email: bkillingsworth@osugiving.com

Student Spotlight

Maggie Goodin
Undergraduate Student

Maggie Goodin is a senior IEM student from Norman, Oklahoma. She will be graduating in December with her Bachelor's in Industrial Engineering. She is involved in several engineering organizations around campus. She is the former president of Alpha Pi Mu, a member of Tau Beta Pi, SWE, IISE, and the American Indian Science and Engineering Society. Some of her hobbies include playing board games with family and friends, hiking, or doing anything outdoors. After graduation in December, she will be moving to Utah with her fiancé to work as an associate systems engineer for Northrop Grumman.

"Success is not final, failure is not fatal, it is the courage to continue that counts" – Winston Churchill

Student Spotlight

Ryne Garrison
Undergraduate Student

Ryne Garrison is a senior studying Industrial Engineering and Management from Burns Flat, OK. He is the son of Heather and Jeff Headrick, and Carl and Sandra Garrison. In his free time he enjoys watching sports and comedy, playing golf, and networking. He always liked the idea of being a businessman, but after his very first high school physics class, he knew he wanted to be an engineer. IEM seemed perfect for him because it felt like a great combination of business and engineering. To this day, he has not regretted this decision once! Over the past four years he has been in many organizations, but currently he is a Fraternity President and member of Order of Omega and Mortar Board. In the future, he plans on completing his FE, getting an MBA, and one day working in administration.

"Work hard, be kind, and amazing things will happen." - Conan O'Brien

Dejanae Berry
MS ETM Student

Dejanae, born and raised in Oklahoma City, is set to graduate this December with her Master's degree in Engineering and Technology Management program. She completed her Bachelor's degree in Industrial Engineering and Management with a minor in Mathematics from Oklahoma State. After undergraduate graduation, she worked as a Telecommunications Engineer, Applications System Analyst, Software Developer, Release Management Specialist, Business Analyst, and Project Manager. She is currently working for Devon Energy as an IT Project Manager 4. When she's not working, she does social media marketing design for stationery companies and plays with her two dogs, Thanos and Dobby. She is most well-known by her colleagues and friends for her very large sneaker collection. Upon completion of her graduate program, she plans to solidify her goals and plans to become an Information Technology Director and start her own consulting firm.

"Despite fear, finish the job". – Kobe Bryant

Student Spotlight

Prayash Bhattarai
Master's Student

Prayash Bhattarai is a master's student in Industrial Engineering and Management with focus in Supply Chain & Logistics. Born in Biratnagar, Nepal, Prayash finished his undergrad in Mechanical Engineering from National Institute of Technology, Jaipur, India. Following his undergraduate degree, he worked with Tata Motors India as a sourcing manager. Working as sourcing manager, he grew his interest in supply chain and logistics which led him to begin his master's degree in this field.

At present, Prayash is working as a Research Assistant and is also a Lead Student in the Industrial Assessment Center. He is thankful for the opportunity where he is directly able to help manufacturing companies save energy, reduce cost, and increase productivity. Prayash is also actively involved in different student organizations. He currently serves as a president of ASCM student chapter, is working as a student ambassador at OSU alumni association and is a secretary of the OSU Nepalese student association.

In future, Prayash wants to work in the field of Supply Chain & Logistics and is planning for an internship in the same domain this spring semester. He understands the importance of supply chain and is interested in solving supply chain problems for companies. During his free time, he enjoys watching movies and soccer matches.

"The way I see it, if you want the rainbow, you gotta put up with the rain." - Dolly Parton

Student Spotlight

Suhao Chen
Doctoral Student

Suhao Chen is a Ph.D. student who came to OSU in August 2018 from his hometown in eastern China. He holds a bachelor's and a master's degree from Nanjing University and Shanghai Jiao Tong University, respectively. He plans to earn his doctoral degree in Industrial Engineering and start a career in academia.

Suhao is grateful to be a part of IEM. He is interested in healthcare data analytics and is currently working as a research assistant on several projects ranging from disease prediction to medical billing. He has coauthored six publications and won three presentation awards. He also serves as an officer at the Toastmasters Stillwater Club.

Suhao and his wife have two daughters, 9 and 5. In his spare time, Suhao likes playing with his kids and watching football games.

"Sometimes the questions are complicated and the answers are simple." – Dr. Seuss

New Students

We look forward to getting to know all of you and helping you on your way to becoming successful industrial engineers!

BS IEM
Hasan AlKhalifah
Karman Archie
Braxton Miles
Andrew Bunting
Kaden Bush
Ethan Frazier
Tyler Golemboski
Matthew Griffin
Darby Guinn
Zachary Hall
Loryn (Grace) Hendrix
Tyler Houk
Rachel Hutcherson
Hwanee Hwang
Ezekiel Jenkins
Austin Kirk
Austin McDaniel
Alan Meenan
Liam Nell
Ethan O'Connor
Ashton Parkey
Austin Sawyer
Michelle Shelton
Colleen Stegmann
Joshua Tacker
Madison Wilson

MS IEM
Md Suman Ahammed
Oday Bani Ahmad
Adwait Ajit Chabukswar
Nimeet Doshi
Hemal Sumanth
Arvind Rao Kotha
Shantanu Namjoshi
Timman Nyamagoudar
Shubham Sushil Onkar
Prathamesh Pawar
Harshith Ponugoti
Samuel Reinhart
Pushkar Sangvikar
Sanket Sunil Sawant
Jugal Prakash Setiya
Suraj Shirsale
Adrian Smith
Diwas Subedi
Shweta Subramaniam

MS ETM
Jennifer Chapman
Jean-Claude Francois
Morgan Gerstmann
Bradley Gibson
TJ Head
Aaron Napier
Cody Newberry
Marisa Reyes
Shannon Stansfield
Mary Caroline Shyr Southern
David Surrena
Zach Taylor
Hender Urdaneta
Joshua Wichers

PhD IEM
Soraya Ezazipour
Matthew Nare
Maral Shahmizad
Jimmy Uba

Graduates

We would like to congratulate the following IEM students for their hard work and dedication in completing their degrees in Spring 2021.

BS IEM
Tolulope Akinwale
Miranda Almen
Erik Andino Mejia
Lily Anthony
Abigail Berrey
Matthew Burchard
Donald Chasteen
Trent Darby
Aspen Dixon
Gloria Flores Morales
McKenzie Goudy
Bailey Hackler
Chad Henderson
Sara Humphrey
James Lucas
Cole Luetkemeyer
Thomas Maloney
Brandon McKisick
Mallory Newell
Cade Phelan
Abby Revoir
Victoria Richardson
Kaustuvi Thapa
Susan Weckler
Matthew Wilkinson
Courtney Williams

ETM Certificate
Shashi Dulal

MS ETM
David Boyle
Meredith Brittain
Sonny Calderon
Paul Christian
Travis Dollar
Cody Eden
Reginal Glenn
Brennan Graves
Parker Herrington
Andrea Kacynski
Ryan McIver
Juan Rivera
Victor Dal Shealy IV
Kent Sherwood
J.B. Wheeker

MS IEM
Pouya Ahadi
Jackson Baker
Nilesh Baraskar
Chaitali Borse
Shahu Chunade
Ayse Dogan
Md Mazharul Islam
Siddhiraj Kadam
Vijay Kanase
Aishwarya Kulkarni
Anshul Maheshwari
Samrat Meher
Manh Nguyen
Amit Sandbhor

Industrial Advisory Board

Hello OSU IEM Family!

The IAB is dedicated to supporting IEM through participation in the accreditation process, helping our curriculum meet the current needs and trends of industry, and mentoring students and senior design projects. At the end of September, we were able to have our fall meeting in Stillwater and spent time with students and faculty. There were several topics that were discussed as we focused on the students and the experiences/opportunities they have while in IEM at OSU. Below are a few of the themes that we saw and heard throughout the day:

- One of the main driving factors for selecting IEM was the “feel” of not just being a number but a name
- Students are gaining access to more real-world hands-on type experiences through the use of the Endeavor Lab, case studies in classes, internship opportunities, and the alumni network
- Multiple examples of working partnerships between faculty, students, and alumni to strengthen the educational experience for the next group of industrial engineers

Any time in Stillwater is great, but it was extra special being back after meeting virtually for the last year. We toured the Endeavor Lab, added Mark Lewis as a new member, awarded the IAB scholarship to Kylie Dowers, and joined the senior design presentations. We also were honored and thrilled to support the department as they successfully went through the accreditation review process. We are continuing to see the school progress and are honored to support and serve.

With warm regards,

The OSU IE&M Industrial Advisory Board

IAB Members

Brian Adams
Textron Aviation

Kevin Doeksen
American Airlines

Ashley Estes
Great Plains Manufacturing

Michael Foss
CoachFossLLC

Jack Goertz
Tandems, Ltd

Frank Groenteman
TMAC

Steve Kiester
Bell Flight

Mark Lewis
PwC

Ed Pohl
University of Arkansas

Zach Roberts
J.B. Hunt Transport Inc.

Stephanie Royce
Oklahoma State University

Tom Saunders
Pioneer Natural Resources

Brenda Shumate
Williams Companies

Jack Watts
Portola Company

IAB Spotlight: Brian Adams

Brian bleeds orange and is passionate about Continuous Improvement and collaborating with teammates to bring new products to market. He is currently the VP of Aftermarket Innovation, where he leads a global team in support of all Textron Aviation aircraft. In addition to product support and customer service, his Aftermarket Product Development team works to bring new and innovative aftermarket solutions to the Textron Aviation Fleet.

Brian has been a part of the Textron Aviation family for 25 years. He began his career in 1996 as an Industrial Engineer for Cessna Aircraft Compant, before holding a variety of leadership positions within manufacturing operations. Brian is Six Sigma Master Black Belt certified and has led various Kaizen and Lean Manufacturing Initiatives for aircraft production. Through his career at Textron Avaiation, he was responsible for development of the manufacturing plan and production startup of many new business jet models including the Citation Latitude, Citation Longitude, and SkyCourier.

Brian earned his B.S. in Industrial Engineering and Management from OSU in 1996, and his M.S. in Industrial Engineering from Wichita State University in 2002. He is currently the Vice Chair of the Industrial Advisory Board for Industrial Engineering and Managment at OSU, and an Aviation Pathways Advisory Board Member for the Wichita and Derby school districts.

Brian is married to Jenny Adams, an alumna of the College of Business at OSU. After grauation, they moved to Wichita, Kansas, where they raised three children. The two oldest, Joe and Grace, are currently attending OSU, and Jack will be an incoming freshman in 2022. Brian enjoys spending time with his family at OSU events, especially tailgating in the fall.

Scholarships & Endowed Professorships

Endowed undergraduate scholarships provide the foundation for excellence and growth of our program. They offer the ability to fund undergraduate students and their enrichment activities with certainty, a critical element in our strategic plan to improve the student experience and create impact. Undergraduate and graduate scholarships provide the opportunity to recruit and retain top student talent.

Undergraduate Scholarships

- Braun Engineering Scholarship
- William L. Cain Industrial Engineering Endowed Scholarship
- Ken and Lynn Case Scholarship
- Robert G. Herod Endowed Engineering Scholarship
- Ron and Diana Orr Endowed Scholarship
- Kent and Sheryl Powers Endowed Scholarship in Industrial Engineering and Management
- Cynthia Renee Travis Endowed Scholarship
- Woodson Family Trust Scholarship
- S.D. and B.W. Yeigh Scholarship for Women in Engineering

Graduate Scholarships

- Leland Blank '70 and Sallie Sheppard Graduate Fellowship in Industrial Engineering and Management
- Lynn E. Bussey Scholarship

Scholarships & Endowed Professorships

Endowed Chairs & Professorships

Endowed Chairs and Professorships provide perpetual funding to attract and retain the highest-quality faculty with the best minds, the most-creative researchers and the most-engaged teachers with national and international recognition. The recognition honors outstanding, distinguished and influential professors who inspire, enhance, and challenge students for greater learning. These endowed positions provide crucial support for scholarly and research pursuits which, in turn, raises the quality, recognition, and reputation of Oklahoma State University.

Endowed Chair

- Donald and Cathey Humphreys Chair in Industrial Engineering and Management

Endowed Professorship

- Wilson Bentley Professorship in Industrial Engineering and Management

Legacy Gifts for Endowed Chairs & Professorships

Legacy gifts for Endowed Chairs and Professorships enable donors to create a powerful philanthropic legacy by making estate gifts towards the hiring and retention of world class faculty in the School of Industrial Engineering and Management for years to come. These endowed positions are crucial for recruiting and retaining the highest-quality faculty with the best minds, the most-creative researchers and the most-engaged teachers with national and international recognition.

Endowed Chair

- Ken and Lynn Case Endowed Chair in Industrial Engineering and Management
- Jack L. and Susan D. Goertz Chair in Engineering

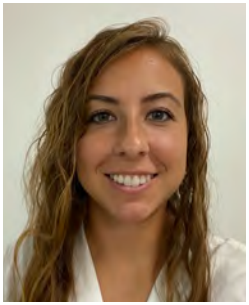
Endowed Professorship

- Rick and Sandra Webb Endowed Professorship in Industrial Engineering and Management

Awards and Honors

Kylie Dowers
Senior of Significance

Harshal Kaushik
2021 Robberson Summer Research and Creative Activity Grant



Megan Mann
MHEFI Selzmic, Inc./ LAMHMS Honor Scholarship

Hao Pan
Homer and Tang Graduate Fellowship

Grace Voth
MHEFI Howard Bernstein Scholarship

Zekai Wang
***3rd Place**, Poster Presentation Competition, 2021 INFORMS Conference*

Jianxin Xie
IISE QCRE & DAIS Tracks Best Student Poster Award Winner

Alumni Accolades

On Saturday, October 23, CEAT celebrated the 2020 and 2021 Hall of Fame inductees and Lohmann Medal recipients.

CEAT Hall of Fame nominees must be a distinguished engineer, architect or technologist who has made an outstanding contribution to their profession or OSU and has served their community, state and nation with distinction. They should represent some of the most distinguished alumni and industry leaders associated with CEAT.

The Melvin R. Lohmann Medal was established in 1991 to honor alumni of CEAT for contributions to the profession or education of engineers, architects or technologists that merits the highest recognition. These honorees are also inducted into the CEAT Hall of Fame.

IEM was well represented, with 2021 Lohmann Medal recipient Dr. Leland Blank, 2020 Hall of Fame inductee Tom Britton, and 2021 Hall of Fame inductee Stan Stephenson.

Dr. Leland Blank graduated from OSU with his Master of Science in 1968 and his doctoral degree in 1970. Since leaving the School of Industrial Engineering and Management (IEM) at OSU, Blank has built a stellar career spanning multiple universities around the globe.

Some of Blank's biggest accomplishments include being a leader in international higher education development, and co-author of two current and leading engineering textbooks in engineering economy. Both textbooks are published by McGraw Hill, with the first textbook on its eighth edition, and the second textbook on its third edition. He has served as the Institute of Industrial and Systems Engineers (IISE) President, as well as interim provost, chief academic officer and dean of engineering at the American University of Sharjah in the United Arab Emirates, the principal investigator (PI) or co-PI of multiple educational and research projects. Blank was a distinguished military graduate from ROTC and a recipient of the Army commendation medal.

Blank has also received IISE's pinnacle award, the Frank and Lillian Gilbreth award in 2018. The Gilbreth award is the highest and most esteemed honor in the field of industrial engineering, which recognizes those who have distinguished themselves through contributions to

the welfare of mankind in the field. He was awarded the IISE Wellington Award for long-term contributions to the field of engineering economy, as well.

Blank has provided leadership at several levels at Texas A&M University: department head; assistant dean; and assistant provost for continuous improvement. Within the Texas A&M University system, his leadership includes several directorships and the key role of assistant deputy chancellor for planning. His industrial experience includes employment with Southwestern Bell Telephone, Public Service Board of San Antonio, and General Telephone Company (now Verizon).

Blank is also the author of over 100 publications — textbooks, journal articles, conference proceedings and keynote papers. His professional focus has been engineering economics, statistics, decision support, strategic planning and managing complex systems. Though the number of his publications is noteworthy, it is not the volume of Blank's work that makes him an exceptional contributor to Industrial and Systems Engineering, but rather his impact. Blank has always been forward thinking and his publications reflect his ability to challenge the status quo and move the finish line.

Blank continues to serve professionally through his membership on the Board of Trustees of St. Mary's University in San Antonio, where he received his bachelor's degree. Additionally, he is a board member and treasurer of The Cowboy Academy of the IEM Department at OSU.

Regarding advice to current and future CEAT students, Blank advises, "become involved in some sort of mentoring program through your academic department or an organization in which you are a member or officer. Listening to and asking questions of several professionals currently in practice, who received an education and degree similar to your own, can be very useful as you decide on dimensions regarding your own career path."

Alumni Accolades

Thomas W. Britton Jr. graduated from Oklahoma State University with a bachelor's degree in mechanical engineering in 1966 and completed his master's degree in industrial engineering and management in 1968. Britton chose a career path that included work for two global professional audit, tax and management consulting firms, Arthur Young & Company (now Ernst & Young) and PricewaterhouseCoopers, where he rose through the ranks and held many different titles over his 35-year career.

His career was, foremost, formulating and leading the delivery of world strategic operational consulting services to global clients. To achieve this, he led firm internal business units and initiatives to define the consulting business strategy and operational structure, achieve revenue, profitability and quality consulting delivery goals.

On the client side, he led the acquisition of and directed multi-million-dollar global projects to formulate enterprise strategy, develop information technology plans, optimize operational resource management resources, design and implement integrated business processes and technology to improve enterprise resource planning and execution.

While at Arthur Young & Company, Britton served as a lead partner in the national, world class, manufacturing practice, and was the practice leader for the West Region Energy Consulting Practice. He was also the managing partner of the Orange County Office Consulting Practice for eight years. He led multidiscipline consulting service teams for clients including Florida Power and Light, Gray Line Tours, LA Gear (now Sketchers), the California Division of Highways, the Alexandria Egypt Sanitation Treatment Department and Northrop Grumman's Aircraft Division.

After 20 years at Arthur Young & Company, Britton spent the next 15 years as a partner at PricewaterhouseCoopers during which time he served in many different client leadership and internal organizational roles for the firm.

He led the multi-industry West Region Products Consulting Practice, serving high technology, consumer products and retail clients. During this time, he served on America's and the Global Products Industry Leadership Council. The scope of services ranged from strategic business planning, operational re-engineering, change management and implementation of enterprise resource planning systems. Consumer products and retail clients included

Allergan, Nike, Levi, Warner Brothers, PetSmart and Disney.

Following this responsibility, he was appointed the global chairman of the high technology consulting practice. The $750 million full-service practice provided business altering consulting support to clients such as IBM, Intel, Motorola, Hitachi, Panasonic, Toshiba, Nokia, Siemens, Dell, Compaq, Samsung, Western Digital, Hewlett Packard and Microsoft.

At the time of his retirement, he was the chief operating officer for the West Region Consulting Business, comprising of over 1,500 professional consultants. In addition, he served on the firm's nominating committee to select the firm's incoming senior partner of the America's Audit, Tax and Consulting Business.

Throughout his career, Britton was involved in numerous philanthropic, government and professional organizations. Among them, he was chairman of the city of San Dimas, California planning commission, was a member of the OSU Alumni Association Leadership Council, was president of the Orange County OSU Alumni Association chapter, was trustee for the Los Angeles Special Olympics, was trustee and president of the board for the South Coast Repertory Theater, served as the annual dinner chairman for the Providence Speech and Heading Center, and was trustee of the Orange County Arts Council.

He has received many honors including being listed in Who's Who in America, Who's Who in the West and Who's Who in Industry. He has authored several pieces of industry literature in the past 35 years. In 2016, he was inducted into the inaugural class of the OSU Cowboy Academy of Industrial Engineering and Management in recognition of his distinguished career. He currently serves on the academy's board of directors. Additionally, Britton was recognized as the 2018 Outstanding Alumni for OSU's College of Engineering, Architecture and Technology's School of Industrial Engineering and Management.

Britton retired in 2003 which has given he and his wife, Deborah, the opportunity to enjoy their passions which include sailing, golfing and traveling. They are the proud parents of two daughters, Natalie and Kimberly, and enjoy their time attending events for their five grandchildren.

Britton fondly remembers his time at OSU as times that taught him life lessons that have been invaluable to him throughout his life and career, "in all that I do, I owe a debt of gratitude to OSU for the 'Cowboy Brand' it made on me."

Alumni Accolades

Stan Stephenson graduated from OSU in 2003 with a Master of Science in Engineering and Technology Management (ETM). He is a registered professional engineer and certified reliability engineer. Stephenson has been with Halliburton since 1979 and is now a chief technical advisor for the company.

Stephenson immediately leveraged his ETM education at OSU to win the 2003 CEO for a Day Competition with a written entry on how to make Halliburton a better, stronger, more profitable company. Following this, he developed a reliability program modeled after the U.S. Army's Ultra-Reliability Program. He managed this program for several years before taking a role to optimize both the capital efficiency and operating efficiency of the Production Enhancement surface equipment.

Stephenson has 64 patented inventions, which vary drastically from one application to another. One invention uses artificial neural networks and genetic algorithms to maximize regional oil production. This production prediction and optimization system was highlighted in the Advanced Well Construction Technology Flagship in the 2000 Halliburton Annual report. This technology was awarded the Hart's Oil and Gas World magazine's Best New Technology for the Mid-Continent Area.

Stephenson was also one of a small team that brought Halliburton's automated stimulation fleet into a reality in the 1980s. A few years later, the fleet became the first in the industry to be controlled remotely through satellite connection.

Stephenson did not limit himself to mechanical, electromechanical, software/firmware or reliability systems. In the area of chemical mixing, he identified and modeled the time, temperature and mechanical shear dependency of guar hydration. This was critical to the functioning of Halliburton's gelling systems.

Stephenson's expertise has been recognized by both his peers and management within Halliburton. He was voted by his peers as a senior member of the technical staff and was selected by management as one of the

charter members of the Strategic Competitive Intelligence Network. He currently reviews about 8,000 patents a year for opportunities for or threats to Halliburton's technologies.

Stephenson's latest activities involve the creation of methods to accurately predict equipment life and operating costs. He created equivalency-based models that contain lifecycle performances of all primary components of the equipment, enabling a very complicated reliability analysis system currently in use in Halliburton. His methods allow Halliburton to maximize the use of their complex high horsepower systems while minimizing failure costs. His depth of knowledge of this technology and other technologies made him the "go-to" individual in the company and in the industry. He has been an invited speaker/consultant on many technologies he developed.

Stephenson gives CEAT students advice when going through their collegiate years, "good judgement comes from bad experiences. You have the authority to do anything for which you are willing to accept the consequences. Understand the half-life of your engineering discipline and plan for your continuing education accordingly. Most importantly, follow your passion so you won't "work" a day in your life."

Spring 2021 Senior Design Update

The Spring 2021 Senior Design team of Kaustuvi Thapa, Cade Phelan and Torie Richardson was selected among the top five finalists nationwide by the Institute of Industrial and Systems Engineers (IISE) for their capstone project, "Cost-Effective Freight Carrier Selection for ArcBest."

Faculty Accolades

The article "Graph Signatures: Identification and Optimization," written by **Dr. Baski Balasundaram, Dr. Juan Borrero,** and doctoral candidate **Hao Pan,** was chosen as an Editor's Choice for June 2021 by the European Journal of Operational Research.

Dr. Austin Buchanan and IEM alumnus **Dr. Hamidreza Validi** received the 2021 ICS Harvey J. Greenberg Research Award, along with Dr. Eugene Lykhovyd, for their paper "Imposing Contiguity Constraints in Political Districting Models."

According to INFORMS, "The ICS Harvey J. Greenberg Research Award honors excellence in the field of computation and operations research applications, especially those in emerging application fields."

Dr. Sunderesh Heragu recently published an op-ed entitled, "As Besieged Healthcare Workers Leave, Americans Face New Challenges to Get COVID Boosters," in the *Miami Herald*.

NIH Grant Awarded

IEM faculty members, Dr. Tieming Liu, Dr. Chenang Liu and Dr. Bing Yao, along with Dr. Ye Liang of the Department of Statistics, secured a major grant from the National Institutes of Health (NIH) worth $1.194 million to study machine-learning algorithms to detect diabetic retinopathy (DR) in the early stages with routine lab results.

DR is a microvascular complication of diabetes, and it is the most common cause of vision loss among diabetic patients and the leading cause of blindness among American adults. Many diabetic patients do not comply with CDC's recommendation for annual ophthalmic exams because DR is asymptomatic in the early stages, and thus they miss the most effective period to halt DR progression and prevent vision loss. Moreover, ophthalmic equipment for DR exams is predominantly limited to urban areas, restricting access by patients in rural communities with limited incomes.

The OSU team led by Dr. Tieming Liu aims to develop a non-image-based, artificial intelligence (AI) tool for primary care physicians to assess patients' risk for DR using comorbidity data and routine lab results, which are widely available. This tool will help physicians recommend ophthalmic exams and individual screening frequency for at-risk patients confidently. The training data is provided by Cerner Corporation and the Center for Health Systems Innovation (CHSI) at the Spears School of Business. However, similar to other electronic-health-record (EHR) databases, the quality of this dataset suffers from missing values, imbalanced and unlabeled data.

The grant, which is spread over four years, will support the research to improve the performance of the DR screening tool by ameliorating the data quality issues in EHR. Specific aims of the project include designing tensor-enabled data imputation, augmentation, and prediction algorithms led by Drs. Tieming Liu, Chenang Liu, and Bing Yao in IEM and a Bayesian hierarchical modeling approach to classify the unlabeled patients' trajectories led by Dr. Ye Liang in STAT.

This grant will enhance OSU's research in both healthcare sciences and AI. Improving EHR data quality offers a great promise for AI-based prediction and personalized medicine of other chronical diseases. This project will also help CHSI to achieve its mission to transform rural and Native American healthcare. AI techniques offer a realistic and effective workaround to handle the dilemma of delivering a higher quality of healthcare at reduced costs to the disadvantaged communities who have limited access to healthcare resources. EHR-based health analytics offers vast potential for improving healthcare, e.g., prediction of adverse clinical events, more accurate patient triaging, disease progression prediction, and treatment optimization.

Faculty Promotions

Congratulations to **Dr. Austin Buchanan** and **Dr. Farzad Yousefian** on their recent promotion to Associate Professor.

Staff Spotlight

Lenley Brown
Administrative Support Specialist

Lenley Brown is the newest face on the IEM staff. He is originally from Miami, FL. Lenley juggles both work and his studies in the OSU-IT cyber security program and is also currently enrolled in online classes with Amazon Web Services. Lenley hopes to one day become a senior cyber security analyst for a major company. In his free time, Lenley enjoys working out, playing soccer and basketball, playing video games, learning IT-related virtual machines, painting and singing.

"You must stand ten toes down and do everything with love and passion to be happy with your life and career."

The Cowboy Academy

The Cowboy Academy Vision
For graduates to achieve their most valued and rewarding careers!

The Cowboy Academy is an organization that was founded in 2016. It was established to honor alumni and former faculty who have contributed significantly to the profession of Industrial Engineering and Management. Each year, the Cowboy Academy can induct up to 12 new members. At this year's fall meeting, we inducted 10 new members.

The Cowboy Academy is more than an honor society, though. I like to think of it as a service organization, one whose membership is composed of those alumni and faculty who want to see OSU's School of Industrial Engineering and Management become the best in the nation, and its alumni become those who are much sought after by industry and other academic institutions.

To help the School of IEM achieve these goals, the Cowboy Academy has established four major committees. These committee members meet often, via Zoom and telephone calls, to define goals and work towards making OSU's School of IEM the best it can be. These committees and their goals are:

- **Marketing Committee**: This committee was originally established to develop a plan to help the world learn about OSU IEM, and how to attract students and faculty to the program. The committee developed a number of videos and social media postings to showcase the program. In the future, this committee may shift focus slightly to highlight the successes of our IEM students, faculty, and alumni. Our students are among the best, let's tell the world!

- **Finance Committee**: Dr Heragu has established a goal of making the School of IEM a fully endowed program. In short, if successful, an endowed school would not be dependent on state funding, and it would have the freedom to chart its own course, within the overall guidelines of CEAT. To reach this goal, an endowment of about $20 million is required. To date, OSU IEM is about 45% of the goal (donations and pledges), but we still have a long way to go. This committee, under the direction of Mike Bartlett, is working with the School and the OSU Foundation to oversee the fundraising program so that we can attain this goal.

- **Mentorship Committee**: This is an exciting committee, where alumni are matched with upperclass IEM students with the goal of assisting these students become the best IE's possible and help them avoid some of the trial and tribulations we all suffered through when we were students and on our first work assignment. Dr Leva Swim is heading this committee, and she is ready for you to volunteer!

- **Center of Excellence:** The COE has taken a while to find its footing, but we believe it's now headed in a great direction. This committee, under the direction of Jon Womack, and assisted by Jeff Greer, works with area

industries who have a need for industrial engineers, and encourages these industries to work with the School of IEM by providing funding and “real world” senior projects.

In short, I am honored to be the president of the Cowboy Academy for the next term. When I meet our TCA inductees each year, I am in awe of the amazing efforts and contributions our OSU Alumni have made since graduation. I am excited to be part of a group who wants to help OSU School of Industrial Engineering and Management become the #1 school in the US!

Go Pokes!

Jack Goertz
President, The OSU Cowboy Academy

The Cowboy Academy's recent annual meeting, held both in-person and online.

The Cowboy Academy

Board Members
Mike Bartlett
Leland Blank
Tom Britton
Brian Eaton
Jack Goertz
Jeff Greer
Frank Groenteman
Mitch Myers
Leva Swim
Gregory Watson
Stacie Wrobbel

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Derek Blackshare
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Denny Carreker
Kenneth Case
Geoff Clarke
Samuel Combs
Megan Crozier
Jerry Dechert
Johann Demmel
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Kerry Gannaway
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Don Humphreys
Cem Karacal
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Steve Kiester
William Kolarik
David Kyle
John Lewis
Rasaratnam Logendran
Jamie Matlock
Gary Maxwell
Jeff McKnight
Joe Mize
Alejandro Moronta
Mitch Myers
Guat Mei Ng
David Nittler
Ron Orr
Robert Paiva
Kent Powers
David Pratt
Dan Rao
Stephanie Royce
Allen Schuermann
James Selman
Mark Semkoff
Brenda Shumate
Ting Nee Su
Jill Swift
Leva Swim
Lyndon Taylor
Silvanus Udoka
Channarong Vinyangkoon
Gregory Watson
Randy Watson
Jack Watts
Rick Webb
Lawrence Whitman
Marion Williams
Nancy Winchester
Jon Womack
Eric Woodroof
Stacie Wrobbel

The Cowboy Academy Inductees 2021


Syam Antony


John Doucette


Steve Kiester


Jeff McKnight


Alejandro Moronta


Dan Rao


James Selman


Mark Semkoff


Channarong Vinyangkoon


Nancy Winchester, Ph.D.

Seminar Series

The School of Industrial Engineering and Management in conjunction with the OSU INFORMS Student Chapter sponsors a Seminar Series in the fall and spring semesters. Various topics are covered by speakers from OSU and other organizations. The seminars were held on Wednesdays from 2:30-3:30 pm during the Spring semester and all seminars were held virtually. Listed below are the seminars we held this semester.

Date	Speaker/Institution	Title
10/20	Dr. Illya V. Hicks, Rice University	Discrete Optimization Techniques for Network and Data Analysis
10/27	Dr. Michael C. Dorneich, Iowa State University	A Virtual Reality Adaptive Training System for Stress Inoculation
11/10	Dr. Balakrishnan Prabhakaran, NSF	Research Funding Opportunities: NSF IIS
11/17	Dr. Zheyu Jiang, Oklahoma State University	Creating a Sustainable Manufactuing and Food Future via Process Systems Engineering Innovations

US News Rankings

US News and World Report has once again recognized the outstanding quality of IEM's programs.

The online graduate MS ETM was ranked #16 among public universities.

US News also ranked IEM among the top 25 graduate programs in industrial/manufacturing/systems among public universities. Among public universities, IEM was ranked number 22, up from number 29 in 2012-13.

2015-2021 IEM Alumni Donors

$100,000+
Mitch Myers
Kent & Sheryl Powers

$50,000+
Leland T. Blank & Sallie Sheppard
Steve W. Herod
Rick and Sandra Webb
Webco Industries, Inc.
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Thomas W Britton, Jr
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The Cowboy Academy
Brian M Adams
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Scott Sink
Katie Speakes
Col (Ret) Richard Thompson
John M Tye, III
Marion L Williams

Student Chapters

The Institute of Industrial and Systems Engineers

The Institute of Industrial and Systems Engineers (IISE) has had an extremely successful Fall semester! Our organization is a global association committed to connecting students and professionals in the Industrial and Systems Engineering field. There is no better way to exemplify this commitment to professional development than our progress of planning for the 2022 IISE South Central Regional Conference. The IISE Chapter at Oklahoma State University has the great opportunity to host this conference from Thursday, February 24–Saturday, February 26. With an expected attendance of over 120 Industrial Engineering students from universities in the states of Missouri, Kansas, Texas, Arkansas, and Oklahoma, this event will truly be a great example of the commitment the IISE Chapter at Oklahoma State University has for excellence within CEAT at OSU. While programming for the conference is IISE's main priority this semester, it is not all we have been doing. In September, with the leadership of the Mentorship Chair, IISE successfully reimplemented the mentorship program within the IEM department. In this program, Freshmen and Sophomores can sign up to be mentored by Seniors in IEM, thereby promoting shared scholarship and friendship among the different class years.

We also plan to host the IISE Six Sigma Green Belt certification course on April 8–10. We are excited to put on another IISE Green Belt certification course to further serve students within IEM and campus-wide, and continuing the tradition of offering yearly certification courses in Lean Six Sigma.

During the 2020–2021 academic year, many plans IISE had were postponed such as the hosting of the IISE South Central Regional Conference and the IISE Six Sigma Green Belt certification course. Yet, we are hopeful this year we will be able to program and host these events with great achievement. At this moment, we would like to recognize the students who have worked so hard to continue the tradition of excellence within our organization. The officers this academic year are:

- Sam Koscelny, President
- Kylie Dowers, Vice President
- Emma Wilson, Conference Chair
- Jay Eischen, Treasurer
- Ainsley Kyle, Secretary
- Kent Slater, Events Chair
- Chole Jones, Recruiting Chair
- Raegen Daigle, Mentorship Chair
- Brenna Rodgers, Merchandise Chair
- Sarah Bishop, Social Chair
- Marco Pina, Communications Chair
- David Schwartz, CEAT Student Council Representative

Faculty Advisor: Dr. Chenang Liu

If you would like more information about IISE or want to become a member, please email Sam Koscelny at sam.koscelny@okstate.edu.

Association for Supply Chain Management

The ASCM OSU Student Chapter, formerly known as APICS, aims to provide a learning environment for new supply chain enthusiasts on multiple supply chain operations and management topics. Our goal is to encourage developing expertise within supply chain management, certifications and provide networking opportunities that will create a bridge between academics and the supply chain industrial work environment.

We have formed a new student committee for the chapter for the year 2021-22 consisting of Prayash Bhattarai, President, Adwait Chabukswar, Vice President and Shweta Subramaniam, Secretary-cum-treasurer. The new committee had a meeting recently to discuss the events for this year. Some of the events discussed were conducting guest lectures by industry experts, supply chain projects in collaboration with industries, industrial visits for students, awareness as well as training programs on supply chain certifications such as CPIM, CSCP, CPSM and Llamasoft Supply Chain Guru certification. There will be another meeting this month to create a detailed plan on the same.

Faculty Advisor: Dr. Tieming Liu

ASCM Supply Chain Seminar

Student Chapters

Alpha Pi Mu Industrial Engineering Honor Society

Alpha Pi Mu is an honors society that aims to recognize IEM students that have achieved academic excellence. It holds scholarly activities and fosters an atmosphere to facilitate social interactions between students and faculty. Alpha Pi Mu offers scholarships, volunteer events, and networking opportunities. Members consist of juniors, seniors, and graduate students that have met the academic requirements.

We are excited to start hosting in-person events this year to involve members. We hosted a speaker event with Ms. Denay Huddleston from Phillips 66 to learn more about her experiences as an Industrial Engineer. Initiation for the Fall was held in person for the first time since the pandemic. We welcome the following new members:

Caitlin Mantooth
Caleb Triplett
Emma Wilson
Enrico Laoh
Harshith Ponugoti
Jayden Grilliette
Karan Hingmire
Keaton Carter
Kent Slater
Lauren Millis
Parisa Sahraeian
Prayash Bhattarai
Raegen Daigle
Ryne Garrison
Sarah Bishop
Shantanu Kulkarni
Shantanu Namjoshi
Sushrut Lokhande
Vamsee Sunkar
Vicky Rijwani

We have also selected new officers for the 2021-2022 academic year.

Kylie Dowers, President
Sam Koscelny, Treasurer

Faculty Advisor: Dr. Manjunath Kamath

Alpha Pi Mu Fall 2021 Initiation

INFORMS

The Institute for Operations Research and the Management Sciences (INFORMS) is the world's largest professional association dedicated to and promoting best practices and advances in operations research, management science, and analytics to improve operational processes, decision-making, and outcomes. The Oklahoma State University Student Chapter of INFORMS is a student lead campus organization focused on promoting student learning and professional advancement with fellow students and faculty within the field of operations research and management sciences. Our goal is to enable students to go beyond the bounds of coursework as they engage in research and extracurricular activities that lay the groundwork for their future as professionals in operation research, supply chain management, advanced manufacturing, human factor, and healthcare. Due to COVID-19, INFORMS Student Chapter will hold hybrid events during Fall 2021 and Spring 2022 as following:

- Gathering: An informal meeting for PhD students and faculties.
- Workshop: R workshop for graduate students in Industrial Engineering and Management department.
- Forum: An informal meeting which invites recently graduated Ph.D.s to share their experiences finding a job in academia and industry.

The INFORMS student chapter advisor is **Dr. Juan Borrero** and the Fall 2021 and Spring 2022 student officers are:

Zhangyue Shi, President
Jianxin Xie, Vice President

If you have any questions or would like to connect with the student chapter, please feel free to email Zhangyue Shi at zhshi@okstate.edu

OSU's INFORMS Student Chapter was recently named an honorable mention chapter. Last year's chapter president, Ph.D. student Niloufar Daemi accepted the award at the 2021 INFORMS annual meeting.

Research Grants

Active in 2019-2021

B. Balasundaram, **A. Buchanan**, and **S.S. Heragu**, FLAT: Freight Lane Assignment Tool, TreeHouse Foods, Inc., 1/13/2020–8/16/2020, $163,730.

B. Balasundaram, **A. Buchanan**, and **S.S. Heragu**, Optimization-Based Aggregate Master Planning Tools for Bay Valley Foods, LLC, Bay Valley Foods, LLC, 10/1/2017–1/31/2020, $250,599.

J. Borrero and L. Lozano, Modeling Worst-case Defender-Attacker Problems as Robust Linear Programs with Mixed-Integer Uncertainty Sets, Office of Naval Research, 05/01/19 - 02/30/22, $300,000.

A. Buchanan, CAREER: Parsimonius Models for Redistricting, National Science Foundation, 6/1/2020 – 5/31/2025, $500,000.

A. Buchanan, Imposing Connectivity Constraints in Large-Scale Network Problems, National Science Foundation, 6/15/2017 – 5/31/2020, $258,586.

S.S. Heragu and R. Wilson (Pls), The Conoco Phillips/OSU Data Analytics Collaboration, ConocoPhillips, 7/1/19 - 6/30/25 $675,000.

R. Taylor, **S.S. Heragu**, and **K. Jurewicz,** New Product Development Center, Economic Development Administration, 10/8/2020-10/7/2023, $1,000,000.

M. Kamath, **F. Yousefian**, and S. Frazier, Development of a GIS Application for Analyzing HazMat Flows in Oklahoma, Oklahoma Department of Emergency Management, 10/1/2018 - 9/31/2019, $131,620.

M. Kamath, **F. Yousefian**, and S. Frazier, Using HazMat Flow Analyzer and Risk Assessment Tools to Support Emerency Resource Planning and HazMat Training Activities in Oklahoma, Oklahoma Department of Emergency Management, 10/1/2019 - 9/31/2020, $131,341.

M. Kamath, F. Yousefian, and S. Frazier, Phase VI: An Integrated GIS Application for HazMat Flow Analysis and Risk Assessment to Support Local Emergency Planning and Preparedness in Oklahoma, 10/1/2020-9/30/2021, $118,110.

M. Kamath, **F. Yousefian**, and S. Frazier, Deployment and Enhancement of the ArcGIS Application for Flow Analysis and Risk Assessment of HazMat Transportation in Oklahoma, Oklahoma Department of Emergency Management and Homeland Security, 10/1/2021-9/30/2022, $132,484.

W. Kolarik, Industrial Assessment Center Program, U.S. Department of Energy, 9/1/2016 - 9/31/2021, $1,500,000.

T. Liu, W. Paiva and Ye Liang. “Validating a clinical decision support algorithm developed with big data to diagnose, state, prevent, and monitor a patient’s diabetic retinopathy,” OCAST, 8/1/2018 - 7/31/2021, $90,000.

T. Liu (PI), **C. Liu**, **B. Yao**, Y. Liang. SCH: Harnessing Tensor Information to Improve EHR Data Quality for Accurate Data-driven Screening of Diabetic Retinopathy with Routine Lab Results. NSF/NIH Smart and Connected Health Program and National Eye Institute. 9/30-2021 – 9/29/2025. $1,193,956.

F. Yousefian, "CAREER: Advancing Mathematical Models and Algorithms for Decentralized Optimization in Complex Multi-agent Networks", National Science Foundation, 3/1/2020 – 2/28/2025, $500,000.

Journal Publications

Papers published or accepted in 2019-2021

Niloufar Daemi, **Juan S. Borrero**, and **Balabhaskar Balasundaram.** "Interdicting low-diameter cohesive subgroups in large-scale social networks," *INFORMS Journal on Optimization*, August 2021. Accepted for publication.

B. Balasundaram, **J.S. Borrero,** H. Pan, "Graph Signatures: Identification and Optimization," *European Journal of Operational Research,* 296(3):764–775, February 2022.

B. Farmanesh, A. Pourhabib, **B. Balasundaram**, and **A. Buchanan**. A Bayesian framework for functional calibration of expensive computational models through non-isometric matching. *IISE Transactions*, 53(3):352–364, March 2021.

Z. Miao and **B. Balasundaram**. An ellipsoidal bounding scheme for the quasi-clique number of a graph. *INFORMS Journal on Computing*, 32(3):763–778, August 2020.

F. Nasirian, F. M. Pajouh, and **B. Balasundaram**. Detecting a most closeness-central clique in complex networks. *European Journal of Operational Research*. 283(2):461-475, June 2020.

J. Ma and **B. Balasundaram**. On the chance-constrained minimum spanning k-core problem. *Journal of Global Optimization*, 74(4):783-801, August 2019.

S. Sun, Z. Miao, B. Ratcliffe, P. Campbell, B. Pasch, Y. A. El-Kassaby, **B. Balasundaram**, and C. Chen. SNP variable selection by generalized graph domination. *PLOS ONE,* 14(1):1–18, January 2019.

J. Yang, **J.S. Borrero,** O.A. Prokopyev, D. Saure, "Sequential Shortest Path Interdiction with Incomplete Information and Limited Feedback," *Decision Analysis* (2021). Forthcoming.

J.S. Borrero, L. Lozano, "Modeling Defender-Attacker Problems as Robust Linear Programs with Mixed-integer Uncertainty Sets," *INFORMS Journal on Computing*, Vol. 33, No. 4 (2021).

J. S. Borrero, M. Akhgar, P. Krokhmal, "A Scalable Markov Chain Framework for Influence Maximization in Arbitrary Networks," *IEEE Transactions on Network Science and Engineering*, Vol. 8, No. 3 (2021).

J. S. Borrero, O. A. Prokopyev, D. Saure, "Learning in Sequential Bilevel Linear Programming," *INFORMS Journal on Optimization* (2021). Forthcoming.

J.S. Borrero, O.A. Prokopyev, D. Saure, Sequential interdiction with incomplete information and learning. *Operations Research*, 67(1): 72-89, 2019.

M.J. Naderi, **A. Buchanan**, J.L. Walteros. Worst-case analysis of clique MIPs. To appear at *Mathematical Programming*.

H. Salemi, **A. Buchanan**. Solving the distance-based critical node problem. To appear at I*NFORMS Journal on Computing*.

H. Validi, **A. Buchanan**, E. Lykhovyd. Imposing contiguity constraints in political districting models. To appear at *Operations Research*.

V. Stozhkov, **A. Buchanan**, S. Butenko, V. Boginski. Continuous cubic formulations for cluster detection problems in networks. *Mathematical Programming*. Accepted for Publication.

H. Salemi and **A. Buchanan**. Parsimonius formulations for low-diameter clusters. *Mathematical Programming Computation*. Accepted for Publication.

H. Validi, **A. Buchanan**. The optimal design of low-latency virtual backbones. *INFORMS Journal on Computing.* Accepted for Publication.

H. Validi, **A. Buchanan**. A Note on “A linear-size zero-one programming model for the minimum spanning tree problem in planar graphs". *Networks*, 73(1): 135-142, 2019.

J.L. Walteros, **A. Buchanan**. Why is maximum clique often easy in practice? *Operations Research*. Accepted for Publication. Honorable Mention in the 2019 JFIG Paper Competition.

T. van de Kracht and **S.S. Heragu**, “Lessons from Modeling and Running the World’s Largest Drive-Through, Mass Vaccination Clinic,” *INFORMS Journal of Applied Analytics*, Vol. 51, No. 2, pp. 91-105, March-April 2021.

F. Majzoubi, L. Bai, and **S.S. Heragu**, "The EMS Vehicle Transportation Problem During a Demand Surge," *Journal of Global Optimization*, Vol. 79, No. 4, pp. 989-1006, 2021.

K. A. Jurewicz, D. M. Neyens, K. Catchpole, A. Joseph, S. T. Reeves, J. H. Abernathy III. An observational study of anaesthesia workflow to evaluate physical workspace design and layout. *British Journal of Anesthesia*. Accepted, 2020.

J. Ma, Y.T. Leung, and **M. Kamath**, 2019, Service system design under uncertainty: Insights from an M/G/1 model, *Service Science*. 11(1):40-56, 2019.

Li, Y., Shi, Z., **Liu, C.**, Tian, W., Kong, Z., and Williams, C., 2021, “Augmented Time Regularized Generative Adversarial Network (ATR-GAN) for Data Augmentation in Online Process Anomaly Detection,” *IEEE Transactions on Automation Science and Engineering*, 2021. Accepted for publication.

Z. Shi, A. Mamun, C. Kan, W. Tian, and **C. Liu**, “An LSTM-Autoencoder Based Online Side Channel Monitoring Approach for Cyber-Physical Attack Detection in Additive Manufacturing,” *Journal of Intelligent Manufacturing*. 2021. Accepted for Publication.

Y. Li, J. VanOsdol, A. Ranjan, and **C. Liu**, “A Multilayer Network-Enabled Ultrasonic Image Series Analysis Approach for Online Cancer Drug Delivery Monitoring,” *Computer Methods and Programs in Biomedicine*. 213: 106505, 2022.

Ye, Z., **Liu, C.**, Tian, W., and Kan, C., “In-situ Point Cloud Fusion for Layer-wise Monitoring of Additive Manufacturing,” Journal of Manufacturing Systems. Vol.61 pp.210-222, 2021.

Z. Shi, C. Kan, W. Tian, and **C. Liu**, "A Blockchain-based G-code Protection Approach for Cyber-Physical Security in Additive Manufacturing," *ASME Journal of Computing and Information Science in Engineering*, 21(4): 041007, 2021.

C. Liu, Z. Kong, S. Babu, C. Joslin, and J. Ferguson, "An Integrated Manifold Learning Approach for High Dimensional Data Feature Extractions and its Applications to Online Process Monitoring of Additive Manufacturing," *IISE Transactions*. 53(11), 1215-1230, 2021.

C. Liu, A. Law, D. Roberson, and Z, Kong, Image analysis-based closed loop quality control for additive manufacturing with fused filament fabrication. *Journal of Manufacturing Systems*. 51: 75-86, 2019

J. Liu, **C. Liu**, Y. Bai, P. Rao, Z. Kong, and C. Williams, Layer-wise spatial modeling of porosity in additive manufacturing. *IISE Transactions*. 51(2):109-123, 2019.

A. Gupta, **T. Liu**, C. Crick. Utilizing Time Series Data Embedded in Electronic Health Records to Develop Continuous Mortality Risk Prediction Models using Hidden Markov Models: A Sepsis Case Study. *Statistical Methods in Medical Research*, 29(11): 3409-3423, 2020.

A. Gupta, **T. Liu**, S. Shepherd. Clinical Decision Support System to Assess the Risk of Sepsis Using Tree Augmented Bayesian Networks and Electronic Medical Record Data. *Health Informatics Journal*, 26 (2): 841-861, 2019.

S. Hariharan, **T. Liu**, M. Z. Shen. Role of Resource Flexibility and Responsive Pricing in Mitigating the Uncertainties in Production Systems. *European Journal of Operational Research*, 284(2), 498-513, 2020.

Y. Zhou, **T. Liu**, G. Cai, Impact of in-store promotion and spillover effect on private label introduction. *Service Science*, 11(2), 96 – 112, 2019.

A. Gupta, T. **Liu**, S. Shepherd. 2019. Clinical decision support system to assess the risk of sepsis using tree augmented Bayesian networks and electronic medical record data. *Health Informatics Journal*. Published Online 13 Jun 2019.

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Fall 2021 Senior Design Teams

Graduating Industrial Engineering and Management (IEM) seniors conclude their academic studies with a capstone course called Senior Design, taken in their last semester. During this course, student teams work as outside 'consultants' on real-world problems for clients in the manufacturing and service sectors. The projects provide students the opportunity to apply the theories and tools they have learned to provide clients with innovative solutions to a problem.

Mint Turbines Team:

Maryam Husein
Madison Ohman
Abbie Winchester

Faculty Mentor:
Dr. Jennifer Glenn

IAB Mentor:
Zach Roberts

Webco Industries Team:

Kaylyn Wells
Ali Ashkanani
Jackson Fife

Faculty Mentor:
Dr. Manjunath Kamath

IAB Mentor:
Ashley Estes

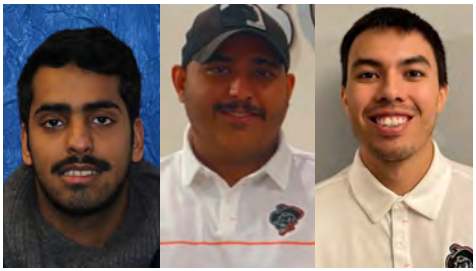
Mingo Aerospace Team:

Bailey Bretz
Abdalah Alkdeefy
Matthew Edgeller
Nicole Koza

Faculty Mentor:
Dr. Sunderesh S. Heragu

IAB Mentor:
Steve Kiester

Fall 2021 Senior Design Teams

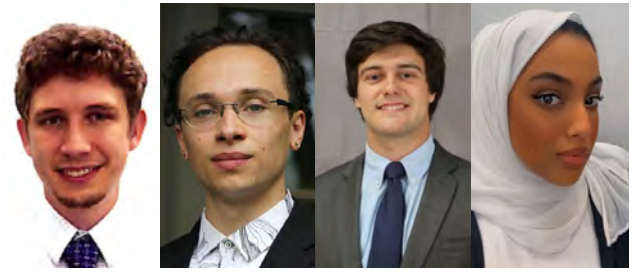


ArcBest Team:

Abduallah Alajmi
Ghazy Alatteer
Austin Douglah

Faculty Mentor:
Dr. Chenang Liu

IAB Mentor:
Tom Saunders



Eskimo Joe's Promotional Products Group Team:

Nicholas Loy
Moraad Bilbeisi
Collin Browning
Dalal Almusbahi

Faculty Mentor:
Dr. Terry Collins

IAB Mentor:
Frank Groenteman

CEAT Interdisciplinary Team

Sustainable UTV Team:

Maggie Goodin
Kaiser Cleburn

IEM Faculty and Staff

Faculty

IEM Administration

Sunderesh Heragu, Ph.D.
Regents Professor, Head, and Humphreys Chair

Tieming Liu, Ph.D.
IEM Graduate Program Director
Associate Professor

Farzad Yousefian, Ph.D.
Undergraduate Program Director
Associate Professor

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Baski Balasundaram, Ph.D.
Wilson Bentley Professor

Juan Borrero, Ph.D.
Assistant Professor

Austin Buchanan, Ph.D.
Associate Professor

Terry Collins, Ph.D., P.E.
Associate Professor

Katie Jurewicz, Ph.D.
Assistant Professor

Manjunath Kamath, Ph.D.
Professor

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Joseph Nuamah, Ph.D.
Assistant Professor

Bing Yao, Ph.D.
Assistant Professor

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Teaching Assistant Professor

Ying Tat Leung, Ph.D.
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