Greetings from Mizzou IMSE. 2020 was definitely a year of challenges, but even in the midst of a pandemic the department had a great year with respect to our student, alumni and faculty accomplishments. Our students particularly demonstrated resilience, both undergraduate and graduate. Classes pivoted to fully remote in the Spring, then returned to hybrid mode in the Fall, with students attending class in person 50% of the time and 50% via Zoom. Our industry-based capstone design projects pivoted to being conducted virtually in the Spring, then returned to partially in person in the Fall. Many students ended up with virtual internships over the summer and continued to obtain positions using their industrial engineering skills in leading organizations around the USA. Finally, of particular note, Sheila Connelly was selected as a member of the prestigious “Mizzou 39” which honors 39 outstanding Mizzou seniors chosen for their academic achievement, leadership and service to Mizzou and the community.

The two groups of alumni that support the department continued to provide significant leadership and service to the department. First, the Industrial Advisory Board (IAB) was involved with capstone project mentoring and review and provided assistance in developing a departmental marketing plan. The IMSE Hall of Fame (HoF) inducted their 12th class of honorees – a truly distinguished group of Mizzou IMSE alumni. The HoF members have contributed financially to provide undergraduate student scholarships and graduate student fellowships, fund a speaker series, faculty awards and supported departmental marketing efforts. Of particular note, the HoF established an endowed Faculty Fund that will eventually grow from a Faculty Fellowship to Professorship to an esteemed Chair position in the department. Finally, the HoF is initiating a mentoring program that will be highly valued by our students as they learn from the experience of these industry leaders.

The year started with the department having nine IMSE T/TT faculty members, but was reduced by one when Dr. Cerry Klein retired over the summer. His courses were partially covered by the hiring of Dr. Omid Shahvari as a full-time instructor. The faculty showed their true abilities as IEs as they pivoted to new modes of course delivery and provided excellent instruction amidst challenging times. The MSIE Online degree, directed by Dr. Bin Wu, continued to expand its offerings. Additional courses developed in 2020 and added to the online program offering included: IMSE 7370 (Srinivas) – Service System Engineering and Management, IMSE 7580 (Wu) – Industrial Energy Efficiency and Management, IMSE 8310 (Noble) – Advanced Integrated Production Systems, and IMSE 8410 (Middelkoop) - Advanced Computational Systems and Data Engineering.

The faculty published extensively (over 40 publications) across a wide range of top journals such as: Applied Ergonomics, IEEE Transactions on Network Science and Engineering, ISE Transactions on Healthcare Systems Engineering, International Journal of Medical Informatics, Journal of Quality Technology, Nature- Scientific Report, Transportation Research Part C, Transportation Research Part E, and Simulation. A significant number of research proposals were submitted to both industry and federal sponsors, and the faculty conducted a range of funded research. Dr. Jung Hyup Kim's research was funded by National Institutes of Health (NINR / SBIR – GaN Corp.) titled: “A Next Generation, Low Cost Tracking System for Health Care Process Validation”. The MU site for the NSF I/UCRC Center for Excellence for Logistics and Distribution continued to have industry partners, conducting research with Boeing, MicroBios and Schneider Electric. Dr. McGarvey was funded by RAND Corporation and Drs. Rajendran and Srinivas were funded by Roche Molecular Systems. Last, but certainly not least, Dr. Jung Hyup Kim was promoted to Associate Professor.

In conclusion, MU IMSE is poised for even greater things in 2021. Please do connect with us via the MU IMSE LinkedIn Group: https://www.linkedin.com/groups/12376416/ Go Mizzou!
Failing equipment, whether a dead car battery or paper jam, can ruin your day and alter your plans. Or a manufacturer’s production line fails for an unknown reason, causing delays in production, shipping and sales.

Currently, there is very little to no warning given to address these problematic issues before they happen. However, Kangwon Seo, an assistant professor in industrial and manufacturing systems engineering with a joint appointment in statistics, is researching how machines can use predictive maintenance themselves to detect when they are going to fail.

“Predictive maintenance is a big application research topic of the fourth industrial revolution and machine learning,” Seo said. “Basically, instead of making a maintenance action every month, people try to use machine learning to predict future failure so that they can make a maintenance action as needed.”

Seo and his doctoral student, Wonjae Lee, recently published this article detailing how a data-driven predictive maintenance exercise led to their proposed algorithms showing better performance for detecting manufacturing equipment failure than other state-of-the-art techniques.

“This research started from a data challenge in 2019 from the IISE (Institute of Industrial and Systems Engineers),” Seo said. “We were one of the three finalists in that competition.”

The data provided for the competition was from an unnamed paper manufacturer. If a paper manufacturer used the developed data algorithm for predictive maintenance, consumers may find cheaper prices on their products.

“Predictive maintenance helps reduce the consumers’ costs in terms of maintenance activity for a manufacturer,” Seo said. “This will reduce the costs that flow through the price pipeline.”

Predictive maintenance will also help reduce overall costs for manufacturers as well.

“A manufacturer will be able to reduce their effort for maintenance activity,” Seo said. “Traditional maintenance activity is centered on period-based or even reactive maintenance, but that can have a lot of costs and take a lot of time to investigate what is wrong.”

Seo thinks research into predictive maintenance is a perfect match with his interests in being an industrial engineer as well as applied statistics.

“When I was a PhD student, my research was about reliability,” Seo said. “But it was more of a traditional statistical model-based research. I think predictive maintenance research is a progression for my career.”

Seo earned his master’s and doctoral degrees from Arizona State University. He received his bachelor’s degree from Hongik University in South Korea. Applied statistics, reliability engineering, and design of experiments are his technical focuses.
A hospital’s intensive care unit (ICU) can be a very busy place. Time is of the essence when treating patients, yet time is a limited commodity for ICU nurses. They treat patients, fill out paperwork, talk with patients’ families and much more every day.

But time spent not treating patients hinders patient care. And in an ICU, patient care is critical.

Jung Hyup Kim, associate professor in Industrial and Manufacturing Systems Engineering, is investigating how to help nurses spend more time with patients who need extra care, especially in a hectic ICU environment.

“In our research, we want to help nurses by using a real-time locating system (RTLS) in how the nurses are doing their work in an ICU,” Kim said.

An RTLS analysis should let Kim learn how nurses participating in the study move around their ICU. In addition, they will learn how much time nurses are in a patient’s room, and learn a nurse’s work sequence. This data should tell Kim how a nurse’s workflow could be improved. To capture this information, the research team will rely on an indoor GPS system. This system has been used at nuclear power plants and by the military. Manual observations are also being used to collect additional data points.

“Manual observations help us explain why the nurse may have been in a particular room for an extended period of time on a particular day,” Kim said. The GPS device does not give a reason why a nurse may be in one area for an extended period of time; just the amount of time spent in one area.

The primary comparison for this data is to determine a nurse’s activity compared to patients’ sequential organ failure assessment (SOFA) scores.

“We want to find the correlation between the time nurses spend in a patient’s room compared to the patient’s SOFA score. If the SOFA score is higher, the patient is sicker,” Kim said. “If we can collect more accurate data, we could be able to determine a proper range of time needed to be spent with patients comparatively to their SOFA score.”

The data collected from the workflow of the ICU nurses will be analyzed. So this could help determine why patient care was delayed or missed. Research results could find opportunities to enhance workflow management design and reduce the total workload for ICU nurses. As a result, this would allow nurses to spend more time with patients.

Kim is the co-primary investigator with Dr. Laurel Despins in the MU Sinclair School of Nursing. Data will be collected through December and is projected to be reviewed and completed by March 2021. Data is currently being collected at the intensive care unit of University Hospital on the University of Missouri campus. The National Institutes of Health provided funding for this research project.
KIM

Service
“Experience Design and Mobility”, HCI in Mobility, Transport and Automotive Systems, HCI International Conference, July 19-24, 2020, Copenhagen, Denmark

KLEIN

Achievements
Outstanding IMSE Teaching Award, University of Missouri, Spring 2020

MCGARVEY

Reviewer
Congressional Budget Office; Washington, D.C.
Journal of Applied Mathematics and Decision Sciences (formerly member of Editorial Board)
Journal of the Operational Research Society
European Journal of Operational Research
Asia-Pacific Journal of Operational Research
Omega, The International Journal of Management Science
Networks & Spatial Economics
International Journal of Production Economics
Computers & Industrial Engineering
Information Processing in Agriculture
IISE Transactions
Health Care Management Science
Optimization Letters

Service
Faculty advisor, IISE Student Chapter

NOBLE

Achievements
MU Outstanding IMSE Teaching Award (voted by graduating class), December 2020

Service
Region V Vice President, Alpha Pi Mu
Faculty Advisor: Alpha Pi Mu Student Chapter

OCCEÑA

Faculty Advisor: SME Student Chapter

RAJENDRAN

Achievements
Winemiller Excellence Award for research excellence in Data Analytics, University of Missouri, March 2020.

Service
Session chair, IISE Annual Meetings
Session chair, INFORMS Annual Meetings

SEO

Reviewer
Statistical Analysis and Data Mining
PLOS ONE
Journal of Statistical Computation and Simulation

SRINIVAS

Achievements

Winemiller Excellence Award for research excellence in Data Analytics, University of Missouri, March 2020.

Reviewer
Topic Editor, Sustainability Journal
Computers and Industrial Engineering
Computers and Operations Research
Health Systems
IISE Transactions on Healthcare Systems Engineering
International Journal of Production Research
Journal of Intelligent Manufacturing
Transportation Research Interdisciplinary Perspectives

Service
Director, IISE Operations Research Division, 2020 – 2022
Judge, IISE Doctoral Colloquium Poster Competition
Judge, IISE Operations Research Division Undergraduate Student Paper Competition
Cerry Klein, a beloved professor of industrial and manufacturing systems engineering, retired in August 2020 after 36 years of service to Mizzou.

Klein served as the IMSE department chair for seven of those years. He also served as director of undergraduate studies and director of graduate studies, with those duties overlapping from 2001-2007.

“He selflessly served the faculty and did all he could to help us become successful,” current IMSE chair James Noble said.

Beyond supporting his fellow faculty professionally, Klein had a tradition that all faculty and staff in Mizzou Engineering looked forward to on Friday afternoons while classes were in session. “Fridays were cookie days in Dr. Klein’s classes. Students would bring cookies to share with the class,” Noble said. “It was common for Dr. Klein to drop by our offices or around to the various staff after class and continue to pass out cookies. You could always count on a Friday afternoon snack after lunch!”

Klein taught many classes over his time at Mizzou, including mathematical optimization courses which were very rigorous and strictly graded.

“If you received an ‘A’ in his course, it was a real accomplishment,” Noble said. “Dr. Klein was passionate about challenging students to think critically.”

Klein’s passion to challenge students earned him his students’ respect, as Klein was an early honoree of the Kemper Fellowship for Teaching Award. He also was voted “Outstanding Industrial Engineering Professor” by Mizzou IMSE graduates over 25 times during his career and received the College of Engineering’s “Outstanding Engineering Faculty Teaching Award” multiple times.

In addition to his Kemper Award, Klein received the Office of Naval Research Young Investigator Award, the Ralph R. Teetor Educational Award from the Society of Automotive Engineers and was named a Fellow of the Institute of Industrial Engineers. He also served as the program director of the Service Enterprise Systems program and the Manufacturing Enterprise Systems program at the National Science Foundation.

“Overall, Dr. Cerry Klein left us a legacy of excellence,” Noble said. “He contributed to it personally and enabled those around him to pursue it as well.”

Klein, over the course of his career, received research funding from the National Science Foundation, the Office of Naval Research, The Kauffman Foundation, U.S. Department of Education, Society of Manufacturing Engineers, Boeing, Union Electric (now Ameren Corporation), Missouri Department of Transportation, and Unilever.

Klein earned his bachelor’s degree from Northwest Missouri State University and his master’s and doctorate from Purdue University. His research areas included health care, energy systems and logistics, entrepreneurship, nonlinear and linear integer programming, dynamic programming, network optimization, multi-criteria and multi-attribute decision making, and scheduling.
“Graduate Assistance in Areas of National Need (GAANN): Industrial Engineering Graduate Scholars Program at the University of Missouri”, US Department of Education, PI Luis Occeña, $590,556.

“CELDi: Reverse Logistics and Inventory Segmentation”, Boeing, PI James Noble, Co-PI Ronald McGarvey, $445,000.


“A Next Generation, Low Cost Tracking System for Health Care Process Validation”, NIH-NINR R44 SBIR, PI Jung Hyup Kim, Co-I Hans G Schantz, Co-I Laurel A Despins, $97,166.


“Predictive Analytics to Support Inventory/Production Decision Making”, Schneider Electric, PI Ronald McGarvey, Co-PI James Noble, Co-I Suchithra Rajendran, Co-I Sharan Srinivas, $65,000.


“Application of Systems Engineering Tools to Aid the COE in Space Allocation Problems”, College of Engineering at University of Missouri, PI Suchithra Rajendran, $30,000.

**KIM**


Guo, W., Kim, J.H. (2020) "Using Metacognitive Monitoring Feedback to Improve Student Learning Performance in a Real-Time Location-Based Augmented Reality Environment" IISE Annual Conference (Accepted)


**MCGARVEY**


Al-Asadi A, Al-Amidie MK, Alwane S, Albehadili H, McGarvey RG, Islam N (2020), Robust Underlay "Cognitive Network Download Beamforming in Multiple Users, Multiple Groups Multicell Scenario." Accepted for publication (accepted December 2020), IET Communications.

achieving a localized food system centered on Chicago, IL using robust optimization." Accepted for publication (accepted December 2020), Environmental Science & Technology.


Bradley, J., & Rajendran, S. "Increasing Adoption Rates at Animal Shelters: A Two-phase Approach to Predict Length of Stay and Optimal Shelter Allocation." BMC Veterinary Research (In press)


**SEO**


**SRINIVAS**


**PRESENTATIONS**

**KIM**


**MCGARVEY**


**NOBLE**


**SEO**


Seo, K. and Pan, R. “Planning Accelerated Life Tests with Multiple Sources of Random Effects." INFORMS Annual Meeting, Virtual, November 2020.


**SRINIVAS**


Outstanding Student Sheila Connelly, from Baldwin, Missouri, had a significant impact during her undergraduate career at Mizzou. Sheila was involved MU Homecoming and was the MU Tour Team coordinator. She participated in undergraduate research with CELDi, working on the Boeing project which led to an internship with the company.

Sheila was vice president of the MU Catholic Student Association, Mizzou Alternative Breaks and involved in the Chi Omega sorority.

She was honored for academic excellence and campus contributions by receiving the Mizzou ’39 Award, inducted into Omicron Delta Kappa and Alpha Pi Mu National Industrial Engineering Honor Society.

She is currently completing her MBA at Mizzou, while working as a virtual intern for The Resource Group.

Outstanding Student Grace Floyd, from Eureka, Missouri, has excelled both in the classroom and in applying the IMSE knowledge she has gained in industry-based research. In her freshman year she became involved in undergraduate research on a CELDi project with Schneider Electric – winning an outstanding CELDi undergraduate researcher award in 2020. She has continued her CELDi involvement and is working on a research project with MicroBios.

She has augmented her coursework with summer internships at Penske Logistics in St. Louis and Chick-fil-A Corporate in Atlanta.

She has been involved with IISE, Mizzou Engineering Leadership Academy, Society of Women Engineers, Veritas Campus Ministry and Kappa Delta Sorority.

Outstanding Student Natalie Mowery, from Ogden, Utah, has excelled in both academics and leadership while at Mizzou. She has served as the president of the Institute for Industrial & Systems Engineering (IISE) for two years, organizing several new events and increasing overall student membership and involvement.

Natalie has had three different internship experiences while at Mizzou: first, with Valbruna Slater Stainless as a process engineer intern, and then two stints as a production engineer intern with The Boeing Company.

She completed a study abroad program in Italy in 2018 studying thermodynamics and has been involved in Alpha Omega Epsilon, an international STEM-based sorority.
Roland Paul Nazareth is a master's student in the Industrial & Manufacturing Systems Engineering at the University of Missouri. Before, he worked as process engineer in GS E&C and Burns & McDonnell India over a period of three years. Roland's research focuses on eye tracking (ET) technology and its application in various industrial fields. The objective of his research is to compare the accuracy and precision of different types of ET devices. Currently, Roland is investigating various ET devices to design and develop experiments associated with human performance and behavior modeling. In 2020, he published a conference paper (The Impact of Eye Tracking Technology) and he presented the paper at the Applied Human Factors and Ergonomics (AHFE) Conference 2020.

Wenbin Guo obtained his PhD in the IMSE department in December 2020. He is currently a postdoctoral research fellow at the University of Florida. His research focused on human factors and ergonomics. Wenbin's dissertation project used metacognitive monitoring feedback to improve student learning in an augmented reality (AR) environment. He used Microsoft HoloLens to develop a more realistic AR environment to engineering students. He published several conference papers and submitted multiple journal manuscripts while completing his research. Over the years, Wenbin demonstrated a high level of intellectual curiosity as well as proven his ability to work well with others and independently. He is a self-motivated, driven student who encourages those around him to achieve as well. Also, he served as the vice president of the Chinese Students and Scholars Association.
Justina Wilkins believed attending college was essential, even in 6th grade when selected as a Kauffman Scholar. She knew her hard work would pay off once she went to college.

"Staying with the program took a large amount of determination and persistence," Wilkins said. "I did not have stress-free summer breaks as I studied for the Prep ACT."

Wilkins, an industrial and manufacturing systems engineering (IMSE) student, credits the Kauffman Scholars Foundation for her academic success prior to and during her college career at Mizzou.

"Kauffman wanted to ensure we were college-ready, and they were willing to do everything necessary to accomplish this goal," Wilkins said. "Thanks to Kauffman, I stayed on track and graduated as valedictorian of my high school class at Cristo Rey Kansas City High School."

The Kauffman Scholar program supports, assists and funds selected minorities’ process to get ready for and complete a college education.

Wilkins and her twin sister Julisha chose Mizzou because of its reputation for quality education in business and engineering. Julisha is in the Trulaske College of Business majoring in international business with an emphasis in finance.

"Attending the same college has allowed us to experience our struggles together. When times become tough, we always have each other," Wilkins said. "Knowing she is always a couple of feet away provides me with comfort, both physically and mentally."

In addition to family support, the Kauffman Scholar program continues to assist Wilkins and other Kauffman Scholars in college both financially and academically.

Support also came from IMSE faculty. During the 2019 fall semester, Wilkins’ family member was gravely ill. Wilkins’ Systems Simulation course instructor, Assistant Professor Sharan Srinivas, was very understanding when Wilkins had to balance schoolwork with family health emergencies.

Currently, Wilkins is the Events Coordinator for the Institute of Industrial and System Engineers (IISE) at Mizzou. She is a member of the National Society of Black Engineers (NSBE), having served as their Programs Chair for one year and as the Food and Beverage Chair on the Conference Planning Committee for the 2019 NSBE Fall Regional Conference.

"One of my favorite experiences occurred when I attended the NSBE 45th Annual Convention in 2019," Wilkins said. "I met engineers from all over the world. It was amazing to see thousands of Black engineers come together to grow, learn and succeed."

Wilkins continues to explore career options while planning to graduate in May 2021.
SCHOLARSHIP RECIPIENTS

UNDERGRADUATE

MU IMSE Hall of Fame Scholarship
Grayson Burns
Maggie Dimler
Noah Novak
Danielle Sims
Nathan Smith
Tommy Spence
Ray Wood

J. Douglas and Barbara N. DeMaire Scholarship
Grace Floyd
Nate Henks
Holly Welker

Robert M. Eastman/Lee C. Raney/Luis G. Occeña Industrial Engineering Endowed Scholarship
Lauren Hyde
Jacqueline Miller

Donald L. Flora and Janet M. Stallmeyer Engineering Scholarship
Ryan Charles
Matt Deay
Rose Koch
Julian Olson

David S. Haffner Engineering Scholarship
Thomas Calaluce
Maddie Fichter
Thomas Shotton
Michael Stroud

Earl M. and Helen G. Wolfe Scholarship
Kaylin Twenter

GRADUATE

MU IMSE Hall of Fame Fellowship
Arash Alizadeh
Mohamed Salama

Stephen E. Gillespie Memorial Scholarship
Joshua Freeman
Dylan Johnson
CAPSTONE PROJECTS

SPRING 2020

American Air Filter
Manufacturing Cell Redesign
Rylee Cooley, Ryan McCoy, Bob Wilkins

Environmental Dynamics International
Manufacturing Line Redesign
Ali Alsunitan, Eddie Mapel, Kelly McLaughlin

PepsiCo / Quaker Oats
Statistical Analysis for Process Redesign
Megan Churchill, Alex Jones, Alex Rodenberg, Megan Sommerfeldt

Scholastic
Decollation Process Redesign
Timothy Grayson, Joel Jenkins, Aidan Harper

Schneider Electric
Material Handling System Redesign
Megan Bereswill, Alaina Keel, Lucas Lanham

University Hospital
Patient Logistics Process Analysis and Redesign
Hadeel Almutairi, Mathew Furrer, Madeline Rygelski

VA Hospital
Blood Testing Lab Inventory Tracking
Sheila Connelly, Tim Furrer, Jason Greenwald

FALL 2020

Gates Corporation
Changeover Process Redesign
Ely Esser, Joshua Neely, Tyler Talkington

University Hospital
Optimizing Float Staffing Pool
Ben Hammond, Lindsay Owen, Abbie Ries, Alec Solverud
2020 provided Alpha Pi Mu with a year of challenges that allowed us to innovate in how we operate our organization. Unfortunately, we were unable to host Lab Exhibits in the spring due to the pandemic canceling Engineers’ Week, but we ended the academic year by initiating two new members. In the fall of 2020, Alpha Pi Mu founded an IMSE mentoring program that connects junior and senior students with freshmen and sophomores and each month the pairings meet on Zoom to discuss important topics. These mentoring sessions discuss succeeding in college, how to land an internship/co-op, keys to interviewing in a virtual world, and much more. This has been an amazing way to bring students in the department together while bettering one another. We inducted three new members in the fall of 2020 and are looking forward to continued growth and success!

While COVID-19 presented a lot of challenges during 2020, our IISE Chapter still accomplished a lot. We started the year with a tour of the Harry S Truman Veteran’s Hospital in February. In March, our executive board attended the South Central Regional Conference, with two students, Lucas Cato and Jacqueline Miller, presenting their papers. COVID-19 cancelled the rest of the spring semester plans, but in the fall, we were able to resume meetings virtually. We brought in three different speakers from Spartan Light Metal Products, Ameren, and Society for Health Systems. Students participated in a virtual tour of Duke Manufacturing through the St. Louis Consortium of AME. We also were able to send two students to participate in the IISE National Conference virtually in early November.

SME launched its Mizzou chapter in 2020, with student Lindsey Sommerfeldt as president. We focused our efforts on connecting different types of engineers with manufacturing passions. Each meeting, we invited a different company to show off their manufacturing processes as well as highlight future job opportunities. In the fall 2020 semester, we invited ABB/Hitachi to present, and in the spring 2021 semester we invited The Independent Stave Company. For 2021, SME plans to go on different factory tours as a group to expand students’ knowledge of manufacturing outside of the classroom.
<table>
<thead>
<tr>
<th>SPRING 2020</th>
<th>SUMMER 2020</th>
<th>FALL 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hadeel Almutairi</td>
<td></td>
<td>Ely F. Esser</td>
</tr>
<tr>
<td>Ali Alsunitan</td>
<td></td>
<td>Benjamin S. Hammond</td>
</tr>
<tr>
<td>Megan Bereswill</td>
<td></td>
<td>Joshua Neeley</td>
</tr>
<tr>
<td>Megan Churchill</td>
<td></td>
<td>Lindsay Owen</td>
</tr>
<tr>
<td>Sheila Connelly</td>
<td></td>
<td>Abbie Ries</td>
</tr>
<tr>
<td>Rylee Cooley</td>
<td></td>
<td>Alec B. Solverud</td>
</tr>
<tr>
<td>Matthew Furrer</td>
<td></td>
<td>Tyler Talkington</td>
</tr>
<tr>
<td>Timothy Furrer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timothy Grayson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jason Greenwald</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aidan Harper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>William Hindle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joel Jenkins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alex Jones</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alaina Keel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edward Mapel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelly McLaughlin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ryan McCoy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alex Rodenberg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madeline Rygelski</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Megan Sommerfeldt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robert Wilkins</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LUCAS CATO, MS

“Determining Optimal Inventory Levels for Items Nearing the End of a Production Run”

Optimal inventory policies determined for items while they are in steady-state production are no longer optimal as they near the end of production. This is due to the obvious fact that during this time, production is no longer in steady state. At the end of a production run, steady state inventory policies can lead to excess costs, as leftover inventory may not be used for a following periods demand. In this project, inventory optimization models specific for items nearing the end of a production run are explored. The cost related benefits of the alternative inventory policies generated by these models are then analyzed using historical datasets. This project is based on an aerospace industry setting and is tailored to model Boeing’s supply chain specifically. However, the ideas and mathematical models presented here can be extended to fit a variety of other applications.

Advisor: Dr. Ronald McGarvey
Committee Members: Dr. James Noble, Dr. Anthony Ross

WENBIN GUO, PhD

“Using Metacognitive Monitoring Feedback to Improve Student Learning in Augmented Reality Environments”

The purpose of the research is to use metacognitive monitoring feedback to improve student learning performance in an augmented reality environment. Phase 1 study was conducted by using one of the topics in ergonomics class, called manual material handling. The results of the Phase 1 experiment showed that retrospective confidence judgments in augmented reality modules could significantly influence the way of students learning when the contents required a high level of spatial awareness during content learning. For the Phase 2 study, the location-based augmented reality system was developed to improve user interaction. Overall, the outcomes of Phases 1 and 2 study will advance our understanding of the interactions between students and the learning content in an augmented reality learning environment.

Advisor: Dr. Jung Hyup Kim
Committee Members: Dr. Luis Occeña, Dr. James Noble, Dr. Bimal Balakrishnan

MD SHORIAT ULLAH, MS

“Prediction of Lithium-ion Battery Capacity by Functional Monitoring Data”

Extensive research was conducted to predict the remaining life cycles of lithium-ion batteries using capacity degradation to improve battery performance and reliability, yet very few tried using other variables such as temperature, voltage, and current data to predict the capacity. In this study, we aim to predict the capacity of lithium-ion batteries using a data-driven approach. Specifically, we adopt function principal component analysis applied to temperature, voltage, and current observations collected from NASA Ames Prognostics Center of Excellence repository. The result verifies that the proposed method performs well to predict the capacity under different cycling conditions over the life span of a lithium-ion battery.

Advisor: Dr. Kangwon Seo
Committee Members: Dr. James Noble, Dr. Xueju “Sophie” Wang
It was an active 2020 for the IMSE Hall of Fame despite the pandemic. On October 23, 2020, five distinguished individuals were inducted (virtually) into the IMSE Hall of Fame. The IMSE Hall of Fame has now reached 64 active living members.

The IMSE Hall of Fame was created in 2008 to recognize and honor those industrial engineering graduates from the University of Missouri who are outstanding in their field, leaders in community affairs, and worthy of emulation and to also recognize and honor those persons who have made outstanding contributions to the IMSE department.

In 2020, the IMSE Hall of Fame provided financial support for:
- Undergraduate and graduate scholarships.
- IMSE student organizations.
- The College’s career fair.

The IMSE Hall of Fame recently worked with the IMSE Department and the College of Engineering to establish the IMSE Hall of Fame Faculty Endowment Fund. This fund will provide financial support for an endowed faculty position in the IMSE department. This will raise the national visibility of the IMSE department and enable it to better achieve the department’s strategic objectives.

Plans were put in place to support the IMSE department in 2021:
- Launch a mentorship program for IMSE students.
- Create virtual seminars for classes that share Hall of Fame member’s expertise, career, and life stories.
- Provide input for the IMSE Department’s strategic plan.
- Develop articles that showcase the range of career possibilities with an IMSE major, to be published by the Engineering Communications division.

The IMSE Hall of Fame is looking forward to welcoming our 13th Hall of Fame class by conducting an in-person induction ceremony and banquet on campus the weekend of Oct. 8-10, 2021, in Columbia, Missouri.

M-I-Z!

Laurie Laning, PhD
IMSE Hall of Fame President
Engineering and marketing are two departments that don’t often overlap in a firm, let alone exist within one person. With a background in industrial engineering and an MBA (Washington University in St. Louis, 1989), Cindy has put her education to work for the telecommunications, electric utility, alternative energy, architecture, engineering, and construction industries. As CannonDesign’s St. Louis office business development leader, Cindy is currently focused on developing new client relationships, creating and executing client engagement strategies, and supporting the firm’s national business growth efforts for architecture and engineering services.

Remarkably active in the community, Cindy serves as the immediate past board president for the Kirkwood School District Foundation, a mentor and special activities chair for the Griffiths Leadership Society for Women at Mizzou, a LEED Green Associate, and a member of the St. Louis Women’s Forum and local chapters of CREW and the Urban Land Institute, where she serves in various committee and leadership roles.

A mother of four (three Mizzou grads and a current senior), Cindy is a dynamic leader with strong roots in St. Louis. She has a long record of technical marketing and business development success and is passionate about the region’s future.
Dennis came to Mizzou in 1972 from junior college in Sedalia, Missouri. When he first heard about industrial engineering, it sounded much more interesting than his initial plan to pursue mechanical engineering at Rolla. Industrial engineering was the perfect choice for him and the education he received at Mizzou was the foundation of his career and professional accomplishments. His 36-year career at Hallmark Cards began in 1974 as an industrial engineer and then as industrial engineering manager in the distribution division.

He then moved to the product division of Hallmark to manage inventory, forecasting, scheduling and finance for various business units. He also established a new retail logistics organization to link internal distribution functions to Hallmark's retail partners' warehousing and store operations. From there, he ventured to a completely different role in long-range strategic planning for the core business. Finally, one of the most rewarding times for Dennis was with Hallmark.com, the e-commerce and internet marketing side of the business. At that time, they were an entrepreneurial group that made up the rules as they went and established the internet presence for the company in the early 2000s.

His professional organization involvement included the Strategic Leadership Forum, the Council of Logistics Management and the Kansas City chapter of the Institute of Industrial Engineers. He was also a registered professional engineer in Missouri. He has always felt the need to share his gifts as a volunteer in organizations where he has a special connection. This has been the case with a local blood donor center, his church, Boy Scouts and the youth ministry he has supported for many years. And now in retirement, volunteering remains an important way to share his gifts.

Dennis says that he will always look back on his industrial engineering college experience at Mizzou as a primary contributor to a rewarding career and professional life made up of many diverse and interesting roles along the way.
Charles H. (“Chuck”) McElroy grew up in Chesterfield, Missouri, and after his graduation from Parkway Central High School in 1974, he graduated from the University of Missouri with a BS in industrial engineering in 1978. Chuck began his career at Southwestern Bell, where he helped form its new holding company, SBC Corporation (now AT&T) and guide the company’s strategic entry into media acquisitions. During this time, Chuck attended Washington University in St. Louis, where he obtained an MBA in 1984.

Chuck joined Cox Communications in Atlanta in 1994 where he pioneered cable’s entry into two-way communication services, launching highspeed data, voice communications, and digital video. As vice president, he also established and ran a new commercial business unit, Cox Business Services, growing it to become the nation’s largest commercial sales and operations among US cable companies. Chuck then joined Charter Communications in 2003 as their senior vice president-southeast operations, growing the division to become the company’s largest with more than two billion dollars in annual revenue.

In July 2007, Chuck became the chief executive officer of China Network Systems (CNS), Taiwan’s largest cable operator, located in Taipei, Taiwan. During Chuck’s five and a half years there, he led CNS to double-digit growth each year, outpacing all other Taiwanese cable operators. After returning to the US, Chuck became the chief executive officer of Deep Fiber Solutions, a non-traditional network construction company located in Roswell, Georgia, in August 2017.

Chuck retired in October 2018 and along with his wife, Lori, make their home in Johns Creek, Georgia. Chuck serves on three non-profit boards and is active in both his church and in his community. Chuck and Lori have three married adult children and two grandchildren. Chuck and Lori enjoy traveling, hiking, playing golf, music and spending time with family.
Luis Occeña earned his BS in industrial management engineering with a minor in chemical engineering at De La Salle University in the Philippines, his master’s in industrial engineering and operations research at Virginia Tech, and finally his PhD in industrial engineering from Purdue University. In 1987 he joined the Department of Industrial and Manufacturing Systems Engineering at MU as a tenure-track assistant professor. In the late 80’s, manufacturing was booming, and MU, like other engineering schools, was focused on growing its manufacturing curriculum.

When Luis asked Dr. Michael Leonard, the department chair at the time, how long he had been in the department, Leonard replied, “Twelve years.” Luis thought that was a really long time to be in one place. This year, Luis will have been a faculty member at MU for 33 years!

While he does not have any degree from the MU IMSE department, Luis believes 33 years is long enough to qualify him as a Mizzou Tiger and a bona fide member of the department. Department graduates in the last 13 years will attest that the final question Luis asks them during their exit interview is always the same: “In the future, maybe fifteen or twenty years from now, will you help this department?”

Luis served the department as chair from 2007 to 2020 and he helped found the IMSE Hall of Fame, which was celebrated for the first time in 2008 with the 50th anniversary of the academic program. In that first class of inductees to the Hall of Fame, there were ten members.

Luis currently serves as an associate professor and interim director of graduate studies for IMSE. He is a member of the Alpha Pi Mu Honor Society and a senior member of the Institute of Industrial and Systems Engineers, the Society of Manufacturing Engineers, the American Society for Engineering Education and the Forest Products Society. He continues to teach and research on topics related to manufacturing, food systems, educational curriculum, and healthcare.

Luis and his wife Kathleen have been blessed with three grown children and five grandchildren. They are active in their faith, enjoy visiting with family, and still run marathons.
Mike Salerno grew up in Kansas City, Missouri, and graduated from Winnetonka High School in May 1980. He attended the University of Missouri from 1980 to 1984. During this time, he made the Dean’s List seven times and was a member of Tau Beta Pi. He graduated with a degree in industrial and manufacturing systems engineering in December 1984.

Mike went to work for McDonnell Douglas Corporation (MDC) in St. Louis in the Aerospace & Defense industry right in the middle of what was later known as the “Reagan Build-up” of the 1980s. He began in the U.S. Navy’s Harpoon Missile program as a cost estimator, and after over three years, he was assigned to support the Tomahawk Cruise Missile program.

In 1989, Mike was named a first-line manager in the Estimating & Pricing organization. Mike earned an MBA degree from Washington University in St. Louis in 1990. In the 1990s, several other management assignments followed in various finance-related functions including Manager of Financial Planning & Analysis for Boeing’s entire defense business and a 1998 stint in Boeing’s Executive Development Program.

In 2000, Mike was promoted to Senior Business Manager for the Logistics Support Services sub-division of Boeing’s defense business. This was the first of many assignments for the rest of Mike’s career where he was responsible for managing and leading the entire Finance organization for various business entities in the company. These responsibilities included bidding and negotiating contracts, managing contract budgets and schedule performance as well as managing aggregate financial performance of the business portfolio. In 2003, Mike was promoted to Boeing’s executive ranks.

Mike relocated with his family to San Antonio, Texas, in May 2003 as Division CFO for Boeing’s Airplane Maintenance / Repair / Overhaul (MRO) business and spent six years there before returning to St. Louis in 2009 as Division CFO for the Missiles and Unmanned Systems portfolio. Many more assignments followed, with responsibilities spanning the breadth of Boeing’s defense and space business, including being CFO of Boeing’s Phantom Works R&D division, where he was heavily involved in the capture of multiple new franchise programs.

Mike and his wife Mary have been happily married since 1988. They have two children – Connor and Libby (Mizzou ’20 graduate) – both of whom now also work for Boeing. Mike retired from Boeing in December 2020, and he and Mary plan to travel, pursue outside interested, enjoy their family and friends, and return to San Antonio for their retirement.
The Industrial & Manufacturing Systems Engineering Department would like to recognize the following individuals for their expertise in industry and commitment to the Department:

2020 Inductees

Cynthia Bambini, BS ’85
Business Development Leader, CannonDesign

Dennis Jaeger, BS ’74
Vice President, Hallmark.com, Hallmark Cards Inc. (retired)

Charles McElroy, BS ’78
CEO, Deep Fiber Solutions (retired)

Luis Occeña*
Associate Professor, Department of Industrial and Manufacturing Systems Engineering, University of Missouri

Michael Salerno, BS ’84
CFO, PhantomWorks R&D, Boeing

2019 Inductees

Tracy Bartels, BS ’88
Vice President & General Manager, Vail Resorts - Mount Snow

Michael Stephen Leonard**

James S. Noble*
Professor & Chair, Department of Industrial & Manufacturing Systems Engineering, University of Missouri

Mark Palmer BS ’78
Technical Quality Manager, North America Digital Business Services, Regulated Industries, SAP America Inc.

Donald R. Wallace BA ’69, MSPH ’73, MS ’74
Vice President, Vizient, Inc. (retired)

2018 Inductees

Vorapoch Angkasith, MS ’99, PhD ’04
Assistant Professor, King Mongkut’s University of Technology, Thailand

Nick Bova, MS ’80
Principal, RSM US LLP (retired)

Andre Logan, BS ’01
Portals Hardware

Adriana S. Ocampo, BS ’96
The Boeing Company

Roland A. Schach, BS ’72, MS ’73
Owner, Meister Consulting LLC

Brian Whorley, BS ’03
Founder and CEO, Paytient

2017 Inductees

Mark Broughton, BS ’94
Vice-President, Solutions, Anheuser-Busch InBev

Kenneth C. Cooper, BS ’70, MS ’71
CooperComm, Inc.

Bryan W. Davidson, BS ’81, MS ’84, MBA ’84
UniGroup

Shannon Wall Frost, BS ’91
Vice President, Integrated Electric and Security

Karen Hamilton, BS ’87
Senior Vice President, Supply Chain, Schneider Electric (retired)

Captain Jeffrey E. Kline, BS IE’79
Naval Postgraduate School

Michael C. Smith, PhD ’77
Associate Professor of Systems Engineering, University of Virginia (retired)

Cerry Klein*
Professor, Department of Industrial & Manufacturing Systems Engineering, University of Missouri (retired)
2016 Inductees

R. Wayne Headrick, MS ’76, PhD ’78
Professor Emeritus of Information Systems, New Mexico State University

Hulas H. King, MS ’83
Chairman, Global Diversity Council, Siemens PLM Software (retired)

Dr. Laurence J. Laning, BS ’74, MS ’75, PhD ’79
Chief Global I.T. Architect, Procter & Gamble Co. (retired)

Beth A. Martin, BS ’85
Quality Manager, 3M (retired)

Anita L. Marx, BS ’78
Founder, AIM Consulting LLC

Dr. John G. Nackel, ME ’75, MS ’75, PhD ’77
Founder & General Partner, Wavemaker Three-Sixty Health

William R. Stanley Jr., BS ’84
Chief, Program Analysis and Evaluation, Combined Arms Support Command, U.S. Army

Kemp Strickler, BS ’82, MBA ’86, MS ’86
Hallmark Cards (retired)

Raymond J. Zimmermann, BS ’71
Senior Director of Engineering, Anheuser-Busch Companies (retired)

2015 Inductees

Cheng “Alec” Chang*+

Patrick Heisinger, BS ’78, MS ’81
Information Security Manager, GrayRobinson

2014 Inductees

J. Douglas DeMaire, BS ’68, MS ’69
President, Primex Technologies (retired)

David F. Engelkemeyer, BS ’73
Chief Operations Officer at SmartPak (retired)

2013 Inductees

Stanley J. Goldfader, BS ’66
Vice President, True Fitness Technology (retired)

C. Patrick Koelling, BS ’76, MS ’77, MBA ’78
Associate Professor, Industrial and Systems Engineering Department, Virginia Polytechnic Institute and State University

2012 Inductees

C. Vance Kauzlarich, BS ’67, MS ’68
Executive Director, Center for Connected Government Technical Center, MITRE Corporation

K. Jamie Rogers, BS ’79
Professor, University of Texas at Arlington

Richard J. Wilding, BS ’68
Director of Libraries, Mid-Continent Public Library (retired)

2011 Inductees

Larry G. David *+

Mary Beth Marrs, BS ’87
Associate Teaching Professor, Director of Enrichment Programs & Strategic Initiatives, and Harry M. Cornell, Jr. Director of the Cornell Leadership Program, University of Missouri

Justin A. Myrick, Sr., PhD ’74
Dean, Raymond B. Jones College of Engineering, Lipscomb University (retired)

Stephen L. Sherman, BS ’67
CEO, McLaughlin Boat Works

George T. Wootten, Jr., BS ’65
EFI Solutions
IMSE HALL OF FAME MEMBERS

John A. Conte, P.E., BS ’66, MS ’72
Senior Instructor, American Society for Quality (retired)

Thomas Davis, BS ’68
Chief Executive Officer, MC Power Company (retired)

Richard P. Covert*
Director, Healthcare Management Systems Society (AHA) (retired)

Zain Mahmood, BS ’90
CEO, Parkson Corporation

Robert C. Thumser III, BS ’82, MS ’90
Engineer, GKN Aerospace

2010 Inductees

Jay T. Dittmann, BS ’76, MS ’77, PhD ’80 +

Jerald B. Gartman, BS ’65
Gartman Aviation Services

Jeff F. Haferkamp, BS ’76
Adjunct Professor, Missouri University of Science and Technology

Christine L. Pierson, BS ’85
President and CEO, Tesl

Henry A. Wiebe, BS ’60, MS ’61
Vice Provost of Global Learning, Missouri University of Science & Technology (retired)

Michael Williamson, BS ’69
President, Empire Bank (retired)

2008 Inductees

Wayne A. Cox, BS ’63, MS ’64
Director of Restructuring, Colgate Palmolive Co. (retired)

Robert M. Eastman *

J. Paul Dittman, BS ’70, MS ’71, PhD ’73
University of Tennessee

Donald L. Flora, BS ’66, MS ’68
President, Flora and Associates, Inc. (retired)

Russell C. Greene, BS ’65
AZZ Corporation (retired)

Richard J. Jauregui, MS ’59
CEO, South Central Texas Enterprises, Inc.

David S. Haffner, BS ’74
Chairman & CEO, Legget & Platt, Inc.

Dr. Owen M. Miller *

Lee C. Raney, MS ’60
Founder, Raney Associates

Dr. Phillip M. Wolfe, BS ’64
Chair and Professor, Industrial Engineering Department, Arizona State University (retired)

Secretary/Treasurer
James S. Noble*
Professor & Chair, Department of Industrial & Manufacturing Systems Engineering, University of Missouri

* Honorary Member
+ Distinguished Past Member
The Department of Industrial & Manufacturing Systems Engineering would like to thank the following sponsors and benefactors for their support and generosity:

Bob and Pamela Bloss
Mark and Deanna Broughton
John Conte
Richard and Mary Covert
Wayne and Darlene Cox
Doug and Barbara DeMaire
Kyle Dorge
David and Susan Engelkemeyer
Don Flora and Janet Stallmeyer
Shannon and Lawrence Frost
Stanley Goldfader
Jeffrey and Kathie Haferkamp
Jeannine Hascall
Roy and Barbara Headrick
Patrick and Deborah Heisinger
Dennis and Geri Jaeger
Charles Kauzlarich
Hulas King
Jeffrey and Donna Kline
Laurie and Judith Laning
Mary Leonard
Justin Myrick
John and Gail Nackel
Adriana Ocampo
Luis and Kathleen Occeña
Christine and Steve Pierson
Fei Qiu
Katherine Rogers
Roland and Martha Schach
Michael and Amanda Smith
William Stanley, Jr.
Kemp and Kristy Strickler
Bob Thumser
Donald and Virginia Wallace
Brian and Regina Whorley
Henry Wiebe
Sara Benton, Regional Operating System/CI Manager – Americas, Modine Manufacturing Company
BS in Industrial Engineering, University of Missouri, 2005

Mark Broughton, Vice President, Solutions – Business Service Center & IT Operations, AB Inbev
BS in Industrial Engineering, University of Missouri, 1994

Bryan Davidson, Director of Strategic Sourcing and Procurement, UniGroup Logistics
MS in Industrial Engineering, University of Missouri, 1984
MBA in Business Administration, University of Missouri, 1984
BS in Industrial Engineering, University of Missouri, 1981

Shannon Frost, Vice President, Supply Chain Strategy and Operations, Hallmark Cards (Retired)
MBA in Finance, University of Kansas, 1995
BS in Industrial Engineering, University of Missouri, 1991

Russell Greene, Vice President – Manufacturing, AZZ Electric (Retired)
BS in Industrial Engineering, University of Missouri, 1965

Jennifer Hedberg-Jones, eCommerce Operations Director, Hallmark Cards
MBA in Finance and International Studies, Rockhurst University, 2010
BS in Industrial Engineering, University of Missouri, 2003

Adam Hogg, Senior Operations Consultant, Brecham Group
MBA in Business Administration, William Woods University, 2005
BS in Industrial Engineering, University of Missouri, 2002

Josh McGinnis, Program Manager – Cruise Missile Systems, Boeing
MS in Engineering Project Management, University of Southern California, 2019
Certificate in Architecture and Systems Engineering, Massachusetts Institute of Technology, 2017
BS in Industrial Engineering, University of Missouri, 2007

Tiffany (Durham) McGinnis, Manager of Operational Excellence and Performance Improvement, BJC HealthCare
BS in Industrial Engineering, University of Missouri, 2008

Christine Pierson, President and CEO, Tresl
MBA in Business Administration, Rockhurst University, 2006
BS in Industrial Engineering, University of Missouri, 1985

Robert Thumser, III, Engineer, GKN Aerospace
MS in Industrial Engineering, University of Missouri, 1990
BS in Industrial Engineering, University of Missouri, 1982

Liz Trimble, Director of Strategic Planning & Analysis, Centene Corporation
MHA in Healthcare Administration, Webster University, 2014
MBA in Business Administration, University of Kansas Graduate School of Business, 2006
BS in Industrial Engineering, University of Missouri, 2000

George Wootten, Jr., Chief Engineer, Engineered Fluid (Retired)
BS in Industrial Engineering, University of Missouri, 1965
FACULTY

Jung Hyup Kim, PhD
Associate Professor
PhD in Industrial Engineering, Pennsylvania State University, 2013
BS in Industrial Engineering, Mississippi State University, 2008
Member, Institute of Industrial and Systems Engineers

Cerry Klein, PhD
Professor
PhD in Industrial Engineering, Purdue University, 1983
MS in Mathematics, Purdue University, 1980
BS in Mathematics, Northwest Missouri State University, 1977
Member, Institute of Industrial and Systems Engineers

Dr. Ronald McGarvey, PhD
Associate Professor
PhD in Industrial Engineering and Operations Research, Pennsylvania State University, 2002
MS in Industrial Engineering and Operations Research, Pennsylvania State University, 1999
BS in Applied Mathematics, Indiana University of Pennsylvania, 1997
Member, Institute of Industrial and Systems Engineers

Timothy Middelkoop, PhD
Assistant Teaching Professor
PhD in Industrial Engineering and Operations Research, University of Massachusetts Amherst, 2006
MS in Industrial Engineering, Florida State University, 1998
BS in Industrial Engineering, Florida State University, 1996
Certified Energy Manager, Association of Energy Engineers

James S. Noble, PE, PhD
Professor, Chair, and Director of Undergraduate Studies
PhD in Industrial Engineering, Purdue University, 1991
MS in Industrial Engineering, Purdue University, 1988
BS in Industrial Engineering, University of Oklahoma, 1986
Missouri Licensed Professional Engineer
Member, Institute for Operations Research and the Management Sciences
Member, Institute of Industrial and Systems Engineers

Luis Occeña, PhD
Associate Professor and Interim Director of Graduate Studies
PhD in Industrial Engineering, Purdue University, 1987
MS in Industrial Engineering and Operations Research, Virginia Polytechnic Institute and State University, 1983
BS in Industrial Management Engineering, De La Salle University, Manila, Philippines, 1981
Member, Society of Manufacturing Engineers
Member, American Society for Engineering Education
Member, Forest Products Society
Member, Institute of Industrial and Systems Engineers

Suchithra Rajendran, PhD
Assistant Professor
PhD in Industrial Engineering and Operations Research, Pennsylvania State University, 2017
MS in Industrial Engineering and Operations Research, Pennsylvania State University, 2013
BE in Industrial Engineering, College of Engineering, Guindy, Anna University, Chennai, Tamil Nadu, India, 2011
Lean Six Sigma Black Belt
Member, Institute of Industrial and Systems Engineers
FACULTY AND STAFF

Kangwon Seo, PhD
Assistant Professor
PhD in Industrial Engineering, Arizona State University, 2017
MS in Industrial Engineering, Arizona State University, 2014
BE in Industrial Systems Engineering, Hongik University, Seoul, South Korea, 2004
Member, Institute of Industrial & Systems Engineers
Member, Institute for Operations Research and the Management Sciences

Omid Shahvari, PhD
Lecturer
PhD in Industrial Engineering, Oregon State University, 2017
MASc in Industrial Engineering, Mazandaran University of Science & Technology, Iran, 2009
BSc in Industrial Engineering, Azad University, Iran, 2004
Member, Institute of Industrial & Systems Engineers
Member, Institute for Operations Research and the Management Sciences

Sharan Srinivas, PhD
Assistant Professor
PhD in Industrial Engineering and Operations Research, Pennsylvania State University, 2017
ME in Industrial Engineering and Operations Research, Pennsylvania State University, 2015
MS in Industrial and Systems Engineering, Binghamton University, State University of New York, 2013
BE in Industrial Engineering, College of Engineering, Guindy, Anna University, Chennai, Tamil Nadu, India, 2011
Lean Six Sigma Black Belt
Member, Institute for Operations Research and Management Sciences
Member, Institute of Industrial and Systems Engineers

Bin Wu, PhD
Professor and Director of Mizzou Online MSIE Program
PhD in Manufacturing Systems, Brunel University, London, England 1988
BS in Production Technology & Management, Brunel University, 1984
Royal Chartered Engineer (C.Eng.), United Kingdom

Amy E. Rhea, MA
Business Support Specialist II
MA Professional & Technical Writing, University of Arkansas at Little Rock, 2018
BA Professional & Technical Writing, University of Arkansas at Little Rock, 2016

STAFF

imse.missouri.edu
PARTNER WITH IMSE

1. MENTORING & SEMINARS
   • Provides a link between college and the workforce that helps students prepare for their careers.

2. LARRY DAVID MEMORIAL SCHOLARSHIP
   • Named in honor of Dr. Larry G. David, past professor and chair of the IMSE Department, and supports undergraduates interested in industrial engineering.

3. IMSE HALL OF FAME FACULTY ENDOWMENT
   • Named in honor of the MU IMSE Hall of Fame to reflect the legacy of alumni who have significantly impacted and contributed to the field of industrial engineering.
   • Supports faculty at fellowship, professorship, or chair levels.

Find more info about our program at IMSE.MISSOURI.EDU
**Introduction**

The IMSE Hall of Fame was established in 2008 to honor and recognize those industrial engineering graduates from the University of Missouri who are outstanding in their field, leaders in their community affairs, and worthy of emulation who have made outstanding contributions to the Department of Industrial and Manufacturing Systems Engineering. Today, the Hall of Fame has grown to 65 living and active members from around the world.

**The IMSE Hall of Fame Faculty Endowment**

Faculty support is crucial towards not only the quality of the department, but also the undergraduate and graduate student experience. Establishing an endowed fund that has the ability to rise from a Faculty Fellow, to Professorship, to a Chair provides the IMSE department the ability to recruit and retain exemplary educators who deliver instruction in that latest research breakthroughs. Naming the fund in honor of the IMSE Hall of Fame cements the legacy of a group of alumni that have significantly impacted and contributed to the industrial engineering field.

**The Opportunity**

Our ultimate goal is to raise $2M to fully endow the first ever Chair in the IMSE Department through cash and estate gift commitments. Funds will support teaching, professional development, research, equipment and materials. Endowment funds are especially vital today, as endowed faculty members are able to use these resources to leverage additional outside sources of support.

**Thank You**

We appreciate the support of our IMSE Hall of Fame members and welcome the opportunity to add your name to the list of members that have made this endowed faculty position possible. Thank you for your consideration to help us reach our goal for the IMSE Hall of Fame Faculty Endowment.

**Ways to Give**

**Online**

Click GIVE on engineering.missouri.edu

Enter IMSE HOF Faculty Endowment under Gift Instructions

**By Mail**

Checks payable to: University of Missouri

Add in Memo: IMSE HOF Faculty Endowment

**Estate Gift Commitments**

Contact the Office of Engineering Advancement