UF

THE DEPARTMENT OF INDUSTRIAL & SYSTEMS ENGINEERING

FALL NEWSLETTER 2018

CHAIR'S MESSAGE

DAVID KABER, PH.D.
DEAN'S LEADERSHIP PROFESSOR & DEPARTMENT CHAIR

Dear Friends,

Welcome to the Fall UF ISE Newsletter. In this letter, we highlight our faculty, our rapid laboratory development, and student accomplishments and growth.

This Fall, we had two outstanding assistant professors join the department in the human-systems area, as well as two lecturers with focuses on our capstone design experience and manufacturing and lean systems coursework. We are fortunate to have this group of new colleagues and we look forward to their high-quality contributions to our research program and graduate and undergraduate course instruction.

Our faculty have also had recent successes in grant funding, including Dr. Stan Uryasev receiving a new award from the Air Force Office of Scientific Research for enhancing risk management approaches and safety criteria for preventing major catastrophes as well as Dr. Maciej Rysz's from the Air Force Research Lab Eglin Air Force Base for research on data mining big satellite data sets for ground target classification processes.

The department is currently undergoing major renovations and expansion of our laboratory spaces. The HEALTH-Engine Lab, with its focus on developing rigorous methods for modeling, analysis, design and improvement of service and healthcare delivery systems, quickly drew in numerous Ph.D. students with research interests in personalized medicine and healthcare facility resource allocation modeling. We are now doubling the size of the Lab as well as the number of graduate research assistants working in health systems engineering area.

UF ISE also has an outstanding undergraduate student body with many of our upcoming engineers serving as officers in students organizations. This year our UF Institute of Industrial & Systems Engineers student chapter received a Gold Award for 2018. In addition to our undergraduates, our graduate student groups are also highly active. At the beginning of this fall term, we welcomed the 22nd cohort of our Outreach Engineering Management (OEM) Program. This program has been part of the Department since 1996 and represents a truly unique combination of ISE technical courses and business management graduate classes.

As many of you may know, UF recently moved up in the public university rankings to #8, and at the department level, we currently maintain a top 20 graduate program ranking at #14. Our faculty is expanding at various ranks with six new hires pending this year in data analytics, operations research and human systems engineering.

We are very excited about all that is happening for the department and we welcome your communication and input on our progress. We hope that you find the content of our newsletter to be of interest and we look forward to hearing from you.

Sincerely and (as always) GO GATORS!

Dave Kaber, Ph.D.
Dean's Leadership Professor and Chair

BY THE NUMBERS

#14

INDUSTRIAL & SYSTEMS ENGINEERING GRADUATE PROGRAM RANKING AMONG PUBLIC UNIVERSITIES

U.S. WORLD & NEWS REPORT 2018

GRADUATE STUDENTS

158
ENROLLED STUDENTS

17%
UNDERREPRESENTED MINORITIES

29%
WOMEN

RESEARCH AREAS

- DATA ANALYTICS
- HEALTH SYSTEMS
- HUMAN SYSTEMS
- INFORMATION SYSTEMS
- OPERATIONS RESEARCH
- SUPPLY CHAIN & LOGISTICS SYSTEMS

FACULTY

14 TENURED/TENURE TRACK FACULTY

4 FACULTY MEMBERS HIRED IN 2018

6 OPEN FACULTY POSITIONS IN DATA ANALYTICS, OPERATIONS RESEARCH, & HUMAN SYSTEMS ENGINEERING

"DR. KABER'S VISION TO GROW AND DIVERSIFY OUR ISE PROGRAM HAS GREATLY ENHANCED THE RESEARCH AND EDUCATIONAL OPPORTUNITIES FOR OUR COLLEGE."

Cammy R. Abernathy, Dean of the Herbert Wertheim College of Engineering

NEW HIRES

KATIE BASINGER, PH.D.

Ph.D. from North Carolina State University

Lecturer

Katie Basinger joins the University of Florida from Raleigh, N.C., where she received her bachelor's, master's and doctorate degree from North Carolina State University. Her research is focused on developing a new strategy for skin expansion techniques to treat burn victims by using an orbicular tissue expansion bioreactor. Basinger joined the department as a lecturer in Fall 2018.

BOYI HU, PH.D.

Ph.D. from West Virginia University

Assistant Professor

Boyi Hu brings expertise in human motion and activity as well as occupational and personal safety. Along with his teaching areas in safety engineering, biomechanical analysis and human-systems in design, he will help expand departmental research efforts in human systems. Hu joined the faculty as an assistant professor in Fall 2018.

WAYNE GIANG, PH.D.

Ph.D. from University of Toronto

Assistant Professor

Wayne Giang is a human factors researcher with a focus on human-decision making and interface design. His interests bridge human-systems and health-systems including design of decision support tools for healthcare providers. Giang joined the faculty in Fall 2018 as an assistant professor and will bring a teaching focus on cognitive engineering, human information processing, and statistics.

MCKENZIE LANDRUM

Lecturer

McKenzie Landrum joined the Department of Industrial and Systems Engineering in January of 2018. She received both her bachelor's degree in Industrial and Systems Engineering and her master's degree in Management from UF. Landrum currently teaches courses in Lean Production Systems, Decision Support Systems, and Industrial Quality Control.

UF IISE CHAPTER GOES FOR GOLD

2018 UF IISE Officers

Angelica Gonzalez, Autumn Thompson, Stephen Chapman, Zackery Bobb, Weston Willingham, Nicole Narvaez, Hannah Perez, Emma Bland, Grace Taylor, Sumer Provance, Chloe Cegelski, Lina Munoz

The UF Student Chapter of the Institute for Industrial and Systems Engineers (IISE) recently received the 2018 Gold Chapter Award, which is the highest honor in the IISE University Chapter Recognition Program.

Founded in 1948, IISE is an international, nonprofit association that provides leadership for the application, education, training, research, and development of industrial and systems engineering.

Gold, Silver, and Bronze awards are determined per year based on a University Chapter Activity Report. This report provides a self-assessment tool for student chapters that allow organizations to track improvement trends and progress. Scores also highlights a specific chapter's accomplishments to the public.

HEALTH-ENGINE LAB BREAKS BOUNDARIES

UF ISE's High-Quality Effective Affordable Lean Translational Healthcare-Engineering (HEALTH-Engine) Lab is undergoing exansion due to growing interest from students studying in the personalized medicine and healthcare facility resource allocation modeling areas.

Some of the most recent research projects that are developing out of the HEALTH-Engine Lab are stochastic and optimization models that study performance of ambulatory care delivery systems featuring e-visit and e-consult under the direction of Dr. Xiang Zhong.

Other projects include work from Dr. Michelle Alvarado's team where they are developing simulation and optimization techniques for appointment scheduling in surgical dermatology and mental health counseling. The team also models new healthcare policies that reduce hospital readmissions, lower prescription drug prices, and improve healthcare cost transparency.

HEALTH-Engine

Hung-yi Lee, Charles Hernandez, Aditya Prakash, Behshad Lahijanian, Jaeyoung Park, Michelle Alvarado, Reynario Sanchez Jr., Xiang Zhong

STAN URYASEV, PH.D.
GEORGE AND ROLANDE WILLIS ENDOWED PROFESSOR

SAFETY FIRST:

DETERMINING RISK OUTCOMES NEAR THRESHOLD VALUE TO PREVENT CATASTROPHE

Dr. Stan Uryasev recently received a new multi-year research grant from the Air Force Office of Scientific Research (AFOSR) to study a new method of characterization of uncertainty for safe and optimal operation of complex physical systems.

Uryasev, who is a professor in the Department of Industrial and Systems Engineering at the University of Florida, is the principal investigator on the project. Other team members include R. Tyrell Rockafellar from the University of Washington, Drew Kouri from Sandia National Laboratories, and Michael Zabarankin from Stevens Institute of Technology.

Common methods of mathematically determining the likelihood of system malfunctioning suffer from a number of computational limitations, including identification of only those risk outcomes that exceed a specific threshold value. For this reason, Uryasev and his research team are investigating a buffered probability of exceedance (bPOE) that allows engineers to count and consider risk outcomes that are near a threshold value, substantially increasing the sensitivity of large-scale system risk analysis to fault states. The bPOE approach quantifies the probability of the tail events associated with a specified mean value of the tail.

The impact of this research is broadly extended to tackle various stochastic optimization issues, as well as problems that occur in data science and machine learning.

"THIS NEW APPROACH WILL ALLOW ENGINEERS TO MAKE A MORE CONSERVATIVE ASSESSMENT OF A RANGE OF SYSTEM RISKS AND TO SPECIFY SAFETY CONTROL MEASURES TO ADDRESS NEAR FAILURE THRESHOLD EVENTS AND PREVENT WHAT COULD BE MAJOR CATASTROPHES."

David Kaber, Chair of the Department of Industrial & Systems Engineering

UF REEF FACULTY MEMBER IS AWARDED TASK ORDER FROM THE AIR FORCE RESEARCH LABORATORY

MACIEJ RYSZ, PH.D.
RESEARCH ASSISTANT PROFESSOR

The Air Force Research Laboratory (AFRL) recently awarded over 1 million dollars to Dr. Maciej Rysz for the continuation of support of research from the University of Florida's (UF) Research and Engineering Education Facility (REEF) at the Eglin Air Force Base in Shalimar, Florida. The main purpose of this research is to develop, analyze, and improve deep learning architectures for classifying targets using synthetic aperture radar (SAR) data. This project was created under the Guidance Navigation and Control task.

The AFRL maintains an autonomous vehicle lab on the REEF campus run by UF faculty and students, as well as AFRL staff and visiting research, and is dedicated to developing new concepts in single and multi-agent navigation systems. The UF REEF built the autonomous vehicle lab under the Guidance Navigation and Control Task from the AFRL. These task orders funded the purchase of a motion capture system to enable control system development and provide a reference for estimator accuracy and development.

In addition to the continuous operation of the autonomous vehicle lab, the AFRL is also interested in utilizing deep-machine learning techniques for classifying targets with SAR data, which is to be used in conjunction with ongoing research with global positioning systems.

UF Herbert Wertheim College of Engineering
Department of Industrial & Systems Engineering
UNIVERSITY *of* FLORIDA

P.O. BOX 116595
GAINESVILLE, FL 32611

WWW.ISE.UFL.EDU

UFISE ISE_UF

OEM ORIENTATION

UF ISE welcomed their 22nd Outreach Engineering Management (OEM) Program cohort to campus on August 17th for an orientation weekend filled with information sessions, course lectures, and a few team building games administered by the UF Recreation center. OEM is a master's program designed for working professionals. Each cohort meets one weekend a month for 20 months, with exposure to a mixture of ISE and business management curriculum.