



in Gear

Fall/Winter 2021

MEM PRODUCING FEMALE LEADERS AT A SUPER RATE

The Master of Engineering Management Program has a student population that is 61 percent women, five times the national average.

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ise BY THE NUMBERS



Degrees Offered

- B.S. in Industrial Engineering
- Accelerated Bachelor/Master in Industrial Engineering
- Master in Industrial Engineering
- Master in Industrial Engineering (Online)
- Master of Engr. Management
- Master of Engr. Management (Online)
- Master of Industrial Engineering / Master of Business Administration
- M.S. in Industrial Engineering
- Doctor of Philosophy in IE

Operations Research

- Master in Operations Research
- M.S. in Operations Research
- Doctor of Philosophy in Operations Research

Integrated Manufacturing Systems Engineering

- Master in Integrated Manufacturing Systems Engineering
- Master of Integrated Manufacturing Systems Engineering (Online)



Degrees Granted (2020-2021)

103 Undergraduates
68 Masters
14 Ph.D.



National Rankings

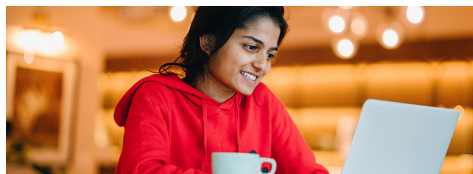
Undergraduate Program: **#14**

Graduate Program: **#16**



Faculty (2020-2021)

29 Tenured and Tenure-track
6 Distinguished Professors
8 Professors
8 Associate Professors
7 Assistant Professors
6 Lecturers
11 Emeritus
16 Adjunct



Enrollments

380 Undergraduates
106 Masters
64 Ph.D.

inGear

Fall/Winter 2021

Department Head

Dr. Julie Swann

Director of Graduate Programs

Dr. Yahya Fathi

Director of Undergraduate Programs

Dr. Kanton Reynolds

inGear Staff

Editor and Design Director

Robert Lasson

Graphic Designers

Robert Lasson, Ian Price, Rebecca Ross

Contributing Writers

Robert Lasson, Kierney Leonard, Stuart Nisbet, Ian Price, Rebecca Ross, Julie Swann

Contributing Editors

Richard Bernhard, NC State College of Engineering Communications

Photographers and Photo Credits

Chris Baird, Tony Blevins, Larry Bowman, Damon Butler, Cheryl Doninger, Candance Gingles, Carlos Gonzalez-Miranda, Jaio Gu, Rashida Hodge, Jeff Johnson, Gayle Lanier, Robert Lasson, Leon McGinnis, Scott Moody, Patrick Murray, Stuart Nisbet, Dave Parker, Shutterstock, Juli Trexler, Taylor Wanbaugh

inGear is a publication of the Edward P. Fitts Department of Industrial and Systems Engineering. It is distributed two times a year to alumni, ISE departments, faculty, students and friends. We welcome your feedback about the magazine and invite submissions of news to ise-socialmedia@ncsu.edu.

To receive news updates throughout the calendar year, please subscribe to inGear online by going to go.ncsu.edu/JoininGear.

NC State Engineering Foundation, Inc.

Campus Box 7901
NC State University
Raleigh, NC 27695-7901
919.515.7458

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FROM THE DEPARTMENT HEAD

Welcome back, everyone. After a full year and a half of teaching, working and studying (remotely for many), the university community has fully returned to campus for the fall semester. It is terrific to see Fitts-Woolard Hall full of people and buzzing with energy. I want to thank everyone for following the COVID-19 procedures and working together to keep each other safe.

While I am thanking everyone, I would also like to thank those who participated in this year's Day of Giving. As you may know, your generosity led to NC State raising \$58 million from more than 14,000 gifts, setting a national record for dollars raised during a university giving day. ISE engaged in a friendly competition with fellow engineering departments, trying to receive the most gifts and win a more significant share of the \$15,000 in prize money from Dean Louis Martin-Vega. With 221 gifts (totaling \$70,460 with an estimated \$3,124.50 in Dean's Prize Money), we finished a close second to Civil Engineering (234 gifts).

We also competed against Civil and Mechanical Engineering to see which would receive 150 gifts first. While Civil Engineering reached its 150 gifts first, all three departments made their challenge, receiving extra funds from our departmental advisory boards. Again, thank you for your generosity and support.

The pandemic has undoubtedly created challenges for faculty, staff, students and alumni alike. So it is the ISE Department's turn to give back. Over the summer, we introduced our new Alumni Resources Program. You, our alumni, can find many free sources to help you advance your career or network with fellow alumni, faculty and students. This program includes our 1100+ member private



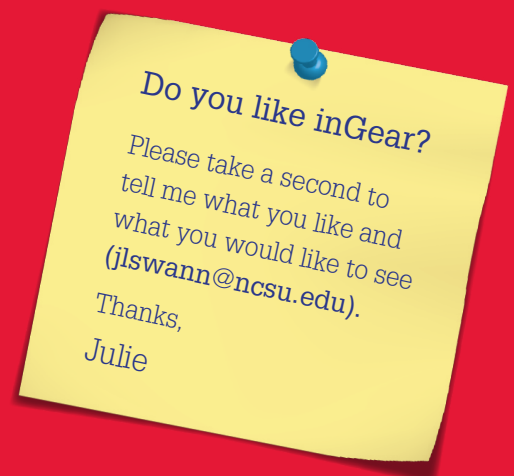
ISE Alumni LinkedIn Group, NC State online library access, ISE job board, and more. We anticipate adding more to it over the coming months. Discover more about the program on page 9.

I will wrap this up with a final thank you. I believe I speak for everyone in the community when I say "Thank you" to Gayle Lanier for her leadership and guidance as ISE's advisory board chair this past academic year. I want to welcome our newest advisory board chair, Stuart Nisbet. But, I will let him tell you a little about himself in his article, Advisory Board Chair Notes, on page 29. And finally, I also want to send well wishes to everyone in the ISE community as we continue to face the challenges that the pandemic brings.

Julie Swann

Dr. Julie Swann

ISE Department Head and
A. Doug Allison Distinguished
Professor



5 Questions with ... **TIFFANY CHIN-MOORE**

Hometown: Oxon Hill, MD
Graduating Class: 2001
Career Overview: Over 20 years in manufacturing in various positions including new product introduction, quality, continuous improvement and industrialization. She is currently the Director of Quality and Continuous Improvement for Cognex Corporation based in Natick, MA.

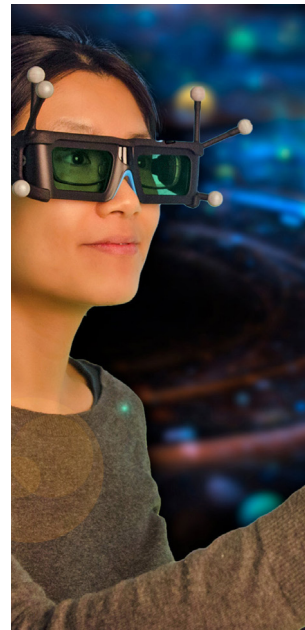
What is the single most important experience or understanding you gained in the ISE department? Leveraging your team's strengths to execute goals. I learned this from one of my very first ISE classes with our group projects and it's a lesson I hold true today not just in the team I lead, but also with my peers in projects we are driving to completion. I understand my strengths and what I bring to the table and leverage those of my team members to achieve common goals.

What is the most pressing issue facing human society that engineers should be working harder to solve? The digital divide still exists. It is not just in lower income areas, but also with older generations. With so many solutions and services migrating to digital platforms, it is forcing a less technical savvy population to a divide that did not exist. I would like to see more emphasis put on addressing this digital divide with learning for those that are not as comfortable with electronics, the internet, etc. along with support and funding for those that desire access but are unable to obtain digital or electronic platforms (phones, computers, etc.).

What would you like to accomplish in your career? What are you most proud of so far? I would like to continue to support the increase of diversity within engineering. I am a firm believer in diversity of thought and the more diverse the background of the team, the more creative you can be at problem solving. I am proud to be in a position that not only supports this initiative, but also in a position that allows me to speak on the great careers in engineering to encourage more underrepresented groups to engage in STEM fields.

If you were not in the engineering field, what would you likely be doing? I would probably be in human resources or teaching. I enjoy developing and coaching people. I also enjoy teaching people new skills and encouraging and stretching people to their full potential. In both HR and teaching, it would afford me the opportunity to do this.

What advice do you have for current ISE students? It's important to get industry experience coupled with your classroom learning. The experience is invaluable and allows you to link coursework and real-life application. It also is important in those internships and coops, that you establish and maintain connections and start building your professional network. Professional organizations like National Society of Black Engineers (NSBE) and Institute of Industrial and Systems Engineering (IISE) are great assets to provide opportunities for relevant job experience as well as your network.



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The Master of Engineering Management Program has a student population that is 61 percent women, five times the national average. Let's meet a couple of its stars.



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How much is a billion? How tiny is an atom? The National Science Foundation (NSF) has awarded assistant professor Karen Chen and her team a \$1.3 million research grant, allowing them to use virtual reality to improve students' understanding of the extremes of scale in STEM.



04

COHEN'S CARING EARNS HIM DISTINGUISHED EDUCATOR AWARD

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With two national championships under her belt, junior swimmer Kylee Alons was named a Second Team CoSIDA Academic All-America selection



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FREE ALUMNI RESOURCES

The ISE Department has launched our Alumni Resources Program to provide you, our alumni, with FREE resources that will benefit you throughout your career.

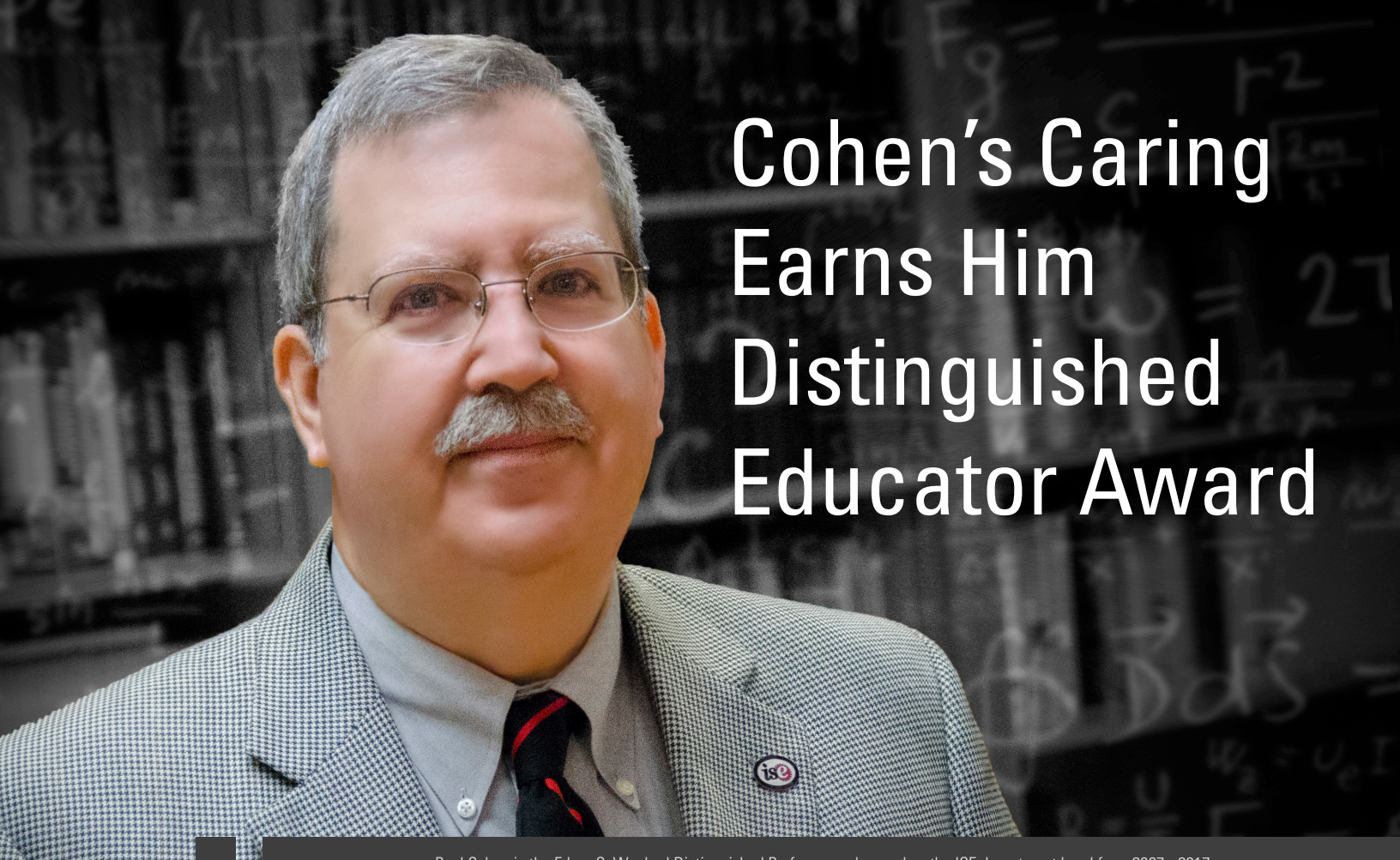


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Cohen's Caring Earns Him Distinguished Educator Award

Paul Cohen is the Edgar S. Woolard Distinguished Professor and served as the ISE department head from 2007 - 2017

All good educators share common qualities like intellect, innovation and passion. But perhaps the quality that separates the great from the good is the ability to care. Style and method can change, but without caring, students will never reach their fullest potential. Paul Cohen, Edgar S. Woolard Distinguished Professor, has made caring the focal point of his forty-year career in higher education. That commitment has earned him the Albert G. Holzman Distinguished Educator Award.

Cohen's contributions to education and constant focus on providing the best possible educational experience are the hallmark of his career. "The most important thing is to care about students

as a person," he reflected. "Once you recognize this, the way you prepare, teach and treat students fall into place." For Cohen, it is rewarding to see students grasp critical concepts and grow, knowing that the professor provided the background to be successful.

Providing the best possible experience requires a commitment to change. "I think it is important to continue to innovate, adapt, and change the content one is teaching over time as the needs of the students change," said Julie Swann, ISE department head. Cohen has continually introduced new and contemporary topics into his classes, developed new courses and added multiple interdisciplinary components. He believes that it is essential to prepare for lifelong

learning and to grow professionally. "There is much to be learned outside the classroom while in school, and this learning certainly continues past graduation," Cohen stated.

Cohen served as the ISE department head from 2007 until 2017, where he spearheaded the focus on providing students with an excellent educational experience. "Even after stepping down from that role, he has continued to be involved in education, research, and outreach," reflected Swann. Cohen pioneered the modernization of a traditional Industrial Engineering area by bringing IT tools into "planning and control" instruction and developed new tools and methods for manufacturing applications in engineering. "His

enthusiasm for engineering has been contagious for everyone he contacts,” explained professor emeritus Richard Wysk.

Cohen embodies what an engineering professor should be. “When I look at the list of past winners, many are good friends who I respect greatly, and I am humbled,” Cohen said. “To be honored for something you love doing, contributing to the education of students, our next generation of professionals is a wonderful recognition and a tribute to my many mentors who shaped my career and its values.” Winning this prestigious award enhances the department’s reputation for high-quality education in the

eyes of industrial engineers worldwide. “We are so proud that Dr. Cohen has been selected for this distinguished educator award, which shows the national and international reputation that he has as an educator of both undergraduate and graduate students,” Swann remarked.

Recently, Cohen also received the Institute of Industrial and Systems Engineering Manufacturing & Design Division’s Outstanding Service Award, recognizing his leadership and contributions to the manufacturing public and community, further showing his dedication and care to the industrial engineering field. ■

Albert G. Holzman Distinguished Educator Award

The Albert G. Holzman Distinguished Educator Award is one of IISE’s most prestigious awards recognizing educators who contributed significantly to the profession through teaching, research and publication, extension, innovation, and administration. “His contributions to industrial engineering span all of the areas required to be a most distinguished educator,” explained Wysk. His door is always open for students and colleagues, whether they have questions or need to discuss ideas. “He has extended himself for students in all of his classes and has even helped students with other classes that he is not teaching,” Wysk recalled.

OUTSTANDING TEACHER WINS OUTSTANDING AWARD

While it may seem backward to some, ISE professor Binil Starly enjoys teaching because he enjoys learning. The ability to teach a variety of courses allows him to better understand new and emerging technology areas. Starly’s passion for learning, teaching, and enhancing education has earned him an NC State Outstanding Teaching Award, a prestigious award recognizing excellence in teaching at all levels.

Passion, Starly believes, is the core of what makes a teacher good. “Show passion for the subject. Students perceive the passion with which a teacher teaches a particular subject and the thoughtfulness placed into the lecture content, exercises, and feedback provided,” he said. ISE emeritus professor Richard Wysk, whose book on computer-aided manufacturing Starly read as an undergraduate, shares the innovative methods Starly uses to involve students in class activities – particularly when content can be dry and boring. “Use of class discussion, Think-pair-share activity, use of sketches, even a cookie tasting exercise

highlight ways in which students can better engage with course material,” he recalled. “His use of 10-minute videos to complement his in-class lecture was available even before the pandemic. It is a practice adopted by many other ISE faculty.”

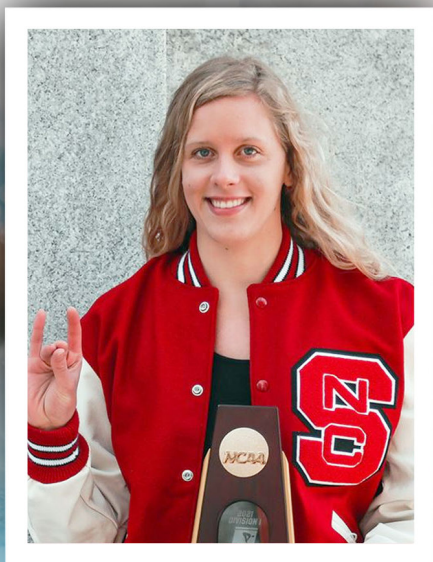
Showing passion for the subject enables students to enjoy the learning process and ensures that the material is constantly improved. “I see my classes that I teach as a product that I deliver,” Starly explained. Like with any good product, he goes through iterations and processes to continuously refine courses year after year. “He is truly a ‘Renaissance Man’ that looks to the future for the next wave of exciting opportunities to produce products,” said Wysk.

Earning an Outstanding Teaching Award is no small accomplishment. In fact, it has been 20 years since the University has honored an ISE faculty member with this award. “I always knew that winning the University Teaching award was hard,” Starly recalled. “It feels great to represent our department among the outstanding teaching faculty ranks.”

“A strong indicator of Dr. Starly’s teaching effectiveness is that he was voted by the ISE students as the Anderson Outstanding Faculty as soon as he became eligible for the award,” Wysk recalled.

Starly wants to thank his parents and his wife for their continuous support, without which he could not have made a positive impact on his students. “I also want to thank the ISE department and the College of Engineering for continuously supporting my teaching effort,” he said. Taking every opportunity to continue teaching, he hopes that winning this award serves as an inspiration for ISE’s junior faculty to excel in engineering education delivery.

Warwick Arden, Executive Vice Chancellor and Provost extends his warmest congratulations for Starly’s excellence as a teacher and mentor. “Your commitment to the success of your students is an embodiment of NC State’s mission and vision,” he praised. For his efforts, Starly will become a member of the Academy of Outstanding Teachers for the duration of his faculty appointment at NC State. ■



ALONS IS AN ACADEMIC ALL-AMERICA SELECTION



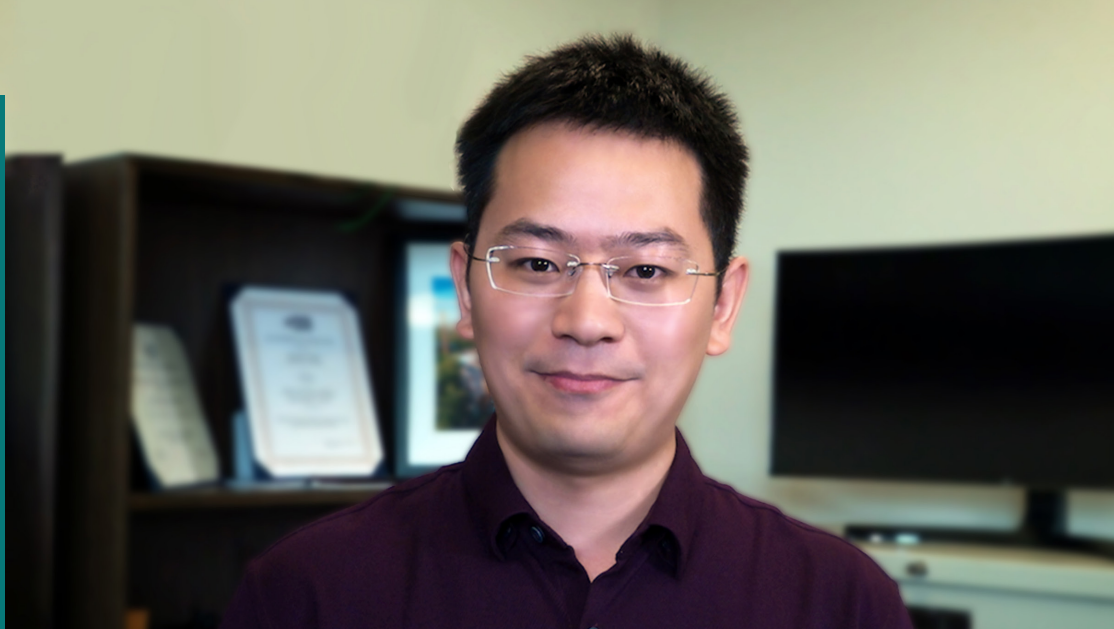
With two national championships under her belt in 2021, junior swimmer Kylee Alons was named a Second Team CoSIDA Academic All-America selection on their At-Large Team. Along with her many athletic accomplishments, Alons has completed her junior year with a 3.80 GPA in her industrial engineering major.

Since she arrived from Fort Collins, CO, Alons has been an All-ACC and CSCAA Scholar All-American team member three times. This past academic year, she won a pair of NCAA titles in the 200-yard and 400-yard medley relays, with her butterfly leg in the 400-yard race helping to set a new NCAA and US

Open record. She was a 2021 All-American in seven events at the NCAA Championships, including all three of her individual events. She also reached the finals of all three of her races at the 2021 ACC Championships. Alons was the ACC champion in the 50-yard freestyle this past season, and she did not lose a single individual race during 2020-21 dual action.

Joining Alons on the CoSIDA Academic All-America Team are fellow swimmer Sophie Hansson (3.83 GPA, Business Management) and fellow swimmer and engineer Eric Knowles (4.0 GPA, Materials Science Engineering). ■

ISE FACULTY SPOTLIGHT



XIAOLEI FANG

Some people are planners. Others go with the flow. Some people play it safe. Others are risk-takers. When it comes to ISE professor Xiaolei Fang, he prefers the best of all worlds — he always has a plan but isn't afraid to seize opportunities.

Fang planned to earn his undergraduate degree — Bachelor's of Science in Mechanical Engineering at the University of Science and Technology Beijing (USTB) — and then join the workforce. But as he was finishing his degree, he seized one of those opportunities. "I was recommended for admission to be a postgraduate without exams when I was a senior," Fang recalled. "I accepted the recommendation since it was exam-free, and I could expect a better job with a higher salary after completing graduate studies."

So Fang continued studying at USTB, working with the top two steel production companies in China, monitoring the conditions of machines

and diagnosing problems. "We had a great team that could build the whole condition monitoring system from head to toe," Fang stated. While there, he contributed to the design and development of different modules of the condition system. This work included hardware design, software development, database and algorithm design and user interface improvement. Fang found a new, intense interest in creating data analytics methodologies within all of this work — an attraction so strong that he once again switched plans and pursued a new degree ... at a new university ... in a new country. He decided to enroll at Georgia Tech to complete a Master's in Statistics and a Ph.D. in Industrial and Systems Engineering.

Along with the decision to change degrees, he also seized the opportunity to change his career path. "I decided to work in academia before I made the decision to pursue a Ph.D. degree," remembered Fang.

"I found it was very interesting to use the knowledge I learned from class to develop new methods to solve challenging problems in real-world applications, especially when no solution is available for these problems or existing models do not work well."

By choosing academia over industry, Fang could have the freedom to work on whatever interested him.

However, the freedom that comes with academia is useless without the resources to back it up. To research what truly interested him, Fang would need a major university. That is when he discovered NC State. "The ISE department at NC State is one of the top in the nation," Fang explained. "The department has a large number of excellent researchers and a wide range of focus areas, which provide plenty of collaboration opportunities. Also, Raleigh is one of the most livable cities with very attractive weather."

With the support of the ISE Department, Fang's research lies in the intersection of engineering, statistics, machine learning, artificial intelligence and optimization. It will help the manufacturing industry to reduce equipment failures and maintenance costs while improving product quality and equipment availability. His research, much like Fang himself, is ready to seize new opportunities with its potential applications across many industries, including manufacturing, healthcare, power and aviation. ■

RETIREMENTS

JAVAD TEHARI

Javad Taheri first joined the NC State ISE Department as a Ph.D. student. As he neared graduation, he had the opportunity to teach a course over the summer. "That summer, I realized how much I enjoyed teaching, and teaching became my life-long desired profession," he recalled.

After graduating, Taheri took this revelation and ran with it, joining the department as a visiting assistant professor. After his time as a visiting scholar, he began working with Northern Telecom corporation (now Nortel). There, he served as a project manager but still maintained an adjunct professorship with the department. "During my career at Nortel, I had hired several of NCSU's Master and Ph.D. students," Taheri said. He also collaborated with the Integrated Manufacturing Systems Engineering Institute Program helping students in their co-op positions. He finished his career at Nortel as the director of Operations Research with early retirement.

Now that he was enjoying his retirement, Taheri attended one of professor Stephen Roberts's classes. "He provided me with an opportunity to contribute to the course material and teach a few of the classes," he said. Soon after, Taheri began teaching Introduction to Simulation and Computer-Based Modeling for Engineers. "Thanks to professor Roberts' ingenuity, I obtained a 5/8 IPA grant from Durham VA Medical Center in 2009, and I became a full-time faculty member," Taheri explained. He later joined professor Julie Ivy and contributed to her CDC Preparedness Project. "My greatest accomplishment has been translating the principles of industrial and systems engineering into practical solutions

at Nortel, mostly in a very high tech manufacturing environment, and at the Durham VA Healthcare System."

Taheri was an innovator in both the industrial engineering industry and in the classroom. "I would like to be remembered as someone who had a genuine interest in and cared deeply for his students," he stated. He would like to thank the late professor John Canada, his first manager, his two committee co-chairs, professor Henry Nuttle and the late Raul Alvarez, his second career mentors, professors Ivy and Roberts and Kenneth Goldberg, at the Durham VA Medical Center.

During retirement, Taheri hopes to volunteer in the community, travel and read poetry. Of course, he hopes to continue his life-long passion for teaching by instructing one — maybe two — classes in the future.



DAN LEONARD



Before joining NC State's Materials Science and Engineering Department in 1992, Dan Leonard was a machinist with Edward Valves (now Flowserve). In September of 2008, Leonard moved from material science to the Industrial and Systems Engineering Department as the supervisor of ISE's Manufacturing Processes Laboratory. This move allowed him to get back to his passion for machining.

As the caretaker of the Processes Lab, Leonard will be remembered for his guidance of countless students in safely completing their machining projects. From lab experiments, course projects, summer camps and open houses, he was the "go-to guy" when there was something to be done that involved the use of equipment and processes under the ISE roof. "Dan is the first face you think of when you think about the manufacturing department," said ISE senior Nikki Gorrell. "He has given so many of us students invaluable skills by volunteering his time around complex machinery. I know that I will be forever grateful for his expertise."

Leonard was not only known for his unwavering belief in safety but for having respect for all things as well. "Working with Dan was great - he was an

instructor, mentor, colleague and friend to me," recalled ISE alumnus and former Processes Lab Technician Tood Goldfarb. "He taught me the value of being safe, doing things the right way and treating our environment, tools and each other with respect. Thank you Dan!"

Long-time lab manager, Jason Low, recalls Leonard's many learning moments both with students and himself. "Dan will always be remembered for keeping all of our lab equipment running smoothly and occupants safe, providing some of the best hands-on laboratory experiences one could ever imagine in an engineering program," remembered Low. "But I will always have fond memories of getting to know Dan as a person and how much he cared for his environment and fellow man. May we all learn by his example."

As Leonard moves into retirement and trades in his infamous closed-toe shoes for a more comfortable pair of sandals, he said he doesn't have any plans. Still, we suspect that one will be able to find him with his wife, Paige, and an accompaniment of friends at the TraLi Pub in Morrisville, playing traditional Irish dance tunes on his iridescent blue Reso-Dude guitar.

One word that could be used to describe Steve Jackson and his career is multidisciplinary. Maybe not a term that is often used to describe someone, but it fits in this case. Jackson received all three of his degrees from NC State, and each in a different engineering discipline.

After graduating with a bachelor's in civil engineering, Jackson spent several years as a designer at an aircraft ground support equipment manufacturing company, eventually rising to the department head position. While there, he implemented product-focused organization and encouraged closer cooperation between the design, production planning, and manufacturing teams. Jackson was later president of a computer-aided manufacturing software firm, leading its product development and administering its general company management.

But it was his passion for manufacturing systems that prompted

his return to NC State, where he would earn his second engineering degree in integrated manufacturing systems. After that, he remained at the university as the director of graduate programs in the Integrated Manufacturing Systems Engineering Institute (IMSEI). It was the perfect fit since IMSEI is a multidisciplinary program that uses faculty, course offerings and laboratory facilities within the engineering, computer science, business, textiles and other departments. In 2001, Jackson earned his Ph.D. in his third engineering field, mechanical engineering.

STEVEN JACKSON



ISE "SEEN"

It's an exciting time to be part of ISE, and these photos prove it. Have you been seen?



US Secretary of Transportation Pete Buttigieg and Second Gentleman Doug Emhoff learn about the advanced manufacturing and 3D printing capabilities of the CAMAL lab

@ncstateise
on
Instagram



ISE and CCEE students enjoy ice cream and take a break at a joint ice cream social.



NC State alumni who didn't have the opportunity to attend an in-person graduation come together for a reception on the oval.

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ISE alumnus Will Heath returns to the Pack as he joins The Ergonomics Center.



ISE alumnus Anton Ørskov Ipsen is back at the 2021 Olympic Games. Check out the wolf he threw after his event in 2016!



ISE graduate student Aman Kumar standing in front of "The Bean" in downtown Chicago

NCStateISE
on
Youtube



ISE's Maria Mayorga talks with CBS 17 about the effectiveness of masks and COVID testing in schools.

TRACKING THE CORONAVIRUS
BACK TO SCHOOL STUDY



Ph.D. graduate Li Li having some fun with a "research partner" during his hooding ceremony at Fitts-Woolard Hall



US Secretary of Transportation Pete Buttigieg and Second Gentleman Doug Emhoff tour the ISE and CCEE Departments before heading over to textiles

@NCStateISE
on
Twitter

GRADUATE STUDENT SPOTLIGHT

Do all engineers start loving STEM at a young age? From disassembling and reassembling models to excelling in math in science classes, it seems like all engineers begin here. However, Ph.D. student Karl Schuchard challenges this stereotype. For him, it all started with a love of nature.

"My parents encouraged my personal scientific exploration when I was growing up, and we did a lot of at-home experiments," Schuchard recalled. Being free to explore nature served to fuel his curiosity, so in college, Schuchard participated in various nature research projects while studying political science and mathematics. One project was a two-year National Science Foundation research program in biology and mathematics. This collaboration gave Schuchard experience performing hands-on research with biologists.

In return, he taught his fellow researchers how to mathematically model results. "Through this work, I learned the value of humbly

stepping outside of my research domain to work on a cross-functional team," he explained. "I knew that this was the type of research that I wanted to continue doing in graduate school."

With support from his advisors in biology and mathematics, finding a path to follow in graduate school was easy. Industrial Engineering was a perfect fit because of its cross-functional and widely applicable field. "ISEs are systematic problem solvers, and I think we catch on fast and can apply ourselves in new ways constantly, all the while working with a huge cross-section of the population," Schuchard stated. It complements what he learned during his undergraduate research flawlessly.

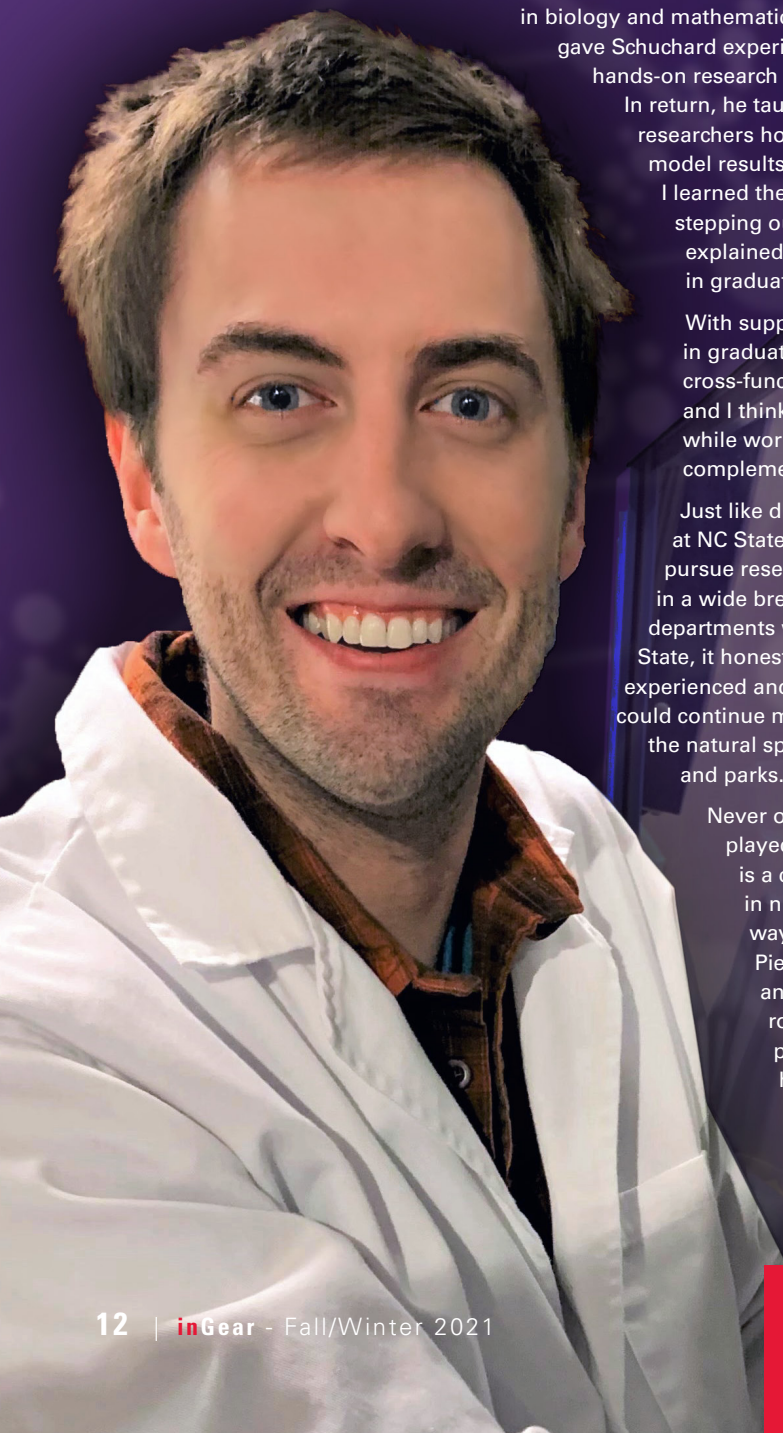
Just like discovering how ISE was the perfect degree, finding the ISE department at NC State was also a Goldilocks situation. "I was unsure of what area I wanted to pursue research in but knew that I wanted a larger ISE department that was solid in a wide breadth of disciplines so I could explore a bit," Schuchard admitted. Some departments were too small, and others were too specialized. "But, when I came to NC State, it honestly felt like home," he said. NC State held many research concentrations, experienced and relatable professors and offered an active larger community. Schuchard could continue making contributions to science, technology, and society while enjoying the natural splendor of North Carolina's beaches, mountains, music, food, lakes, rivers and parks.

Never one to slow down, Schuchard stays active while finishing his Ph.D. "I've played golf since I was 5 and of course, being in North Carolina: every day is a challenge to keep my GPS pointed away from the range or squeezing in nine (or 18, don't tell my advisor)," he exclaimed. Schuchard even finds ways to merge nature and engineering. "I really enjoy rock climbing in the Piedmont with my friends and girlfriend," he said. Many routes are protected and require removable anchors into existing cracks or weaknesses in the rock. "It's really a high-dimensional engineering problem that you get to physically experience, which is both physically and mentally challenging," he explained.

Upon graduation, Schuchard will consider biomedical and pharmaceutical manufacturing, research and development, and quality science opportunities. "The Research Triangle Park is a great place to be for pursuing these positions, so I will be here for now." ■

KARL SCHUCHARD

Karl Schuchard is a Ph.D. student who received his bachelor's degree in political science from the University of Minnesota. His research focuses in the area of biomanufacturing under professor Rohan Shirwaiker





**Dr. Swann
needs my help!
I'm on the way!**

Alumni and Friends of ISE Help Set a New Day of Giving Record

As alumni, faculty and staff members, and friends of ISE came together in support of their department, they helped drive NC State to a record-setting day. Overall, the University raised \$58 million from more than 14,000 gifts, setting a national record for dollars raised during a college or university giving day, according to the consulting firm State of Wow. The previous record for the highest total funds raised during a single day was held by Purdue University when \$42 million was raised in 2020.

Throughout the day, ISE engaged in a friendly competition, trying to receive the most gifts to win a greater share of \$15,000 in prize money from Dean Louis Martin-Vega. The Department of Civil, Construction, and Environmental Engineering (CCEE) won, with 234 gifts, closely followed by ISE with 221

(totaling \$70,460 with an estimated \$3,124.50 in Dean's Prize Money) and the Department of Mechanical and Aerospace Engineering (MAE) with 193.

ISE also competed against CCEE and MAE to see which would receive 150 gifts first. While CCEE reached its 150 gifts matching challenge first, all three departments made their challenge, receiving extra funds from their departmental advisory boards.

Day of Giving is a 24-hour fundraising campaign to raise money to support the University's world-class research, develop new opportunities and improve existing programs for students. Now in its third year, NC State has seen a rise in giving every year since 2019. Remarkably, the 2021 record-setting total comes just six months after the 2020 Day of Giving, which was

postponed to September due to the COVID-19 pandemic.

Competing against other colleges and units at NC State, the College won two of the hourly challenges — most gifts made from 12 – 1 a.m. and the “Show Us Your Wolfies” photo challenge — earning an extra \$3,500. Despite spending a good portion of the day at the top of the leaderboard for total funds raised, the College was runner-up for both total funds and number of gifts.

ISE is grateful to everyone who participated in this year's Day of Giving. The incredible support will have an impact for future industrial and systems engineers for generations to come. ■

A close-up portrait of Julie Swann, a woman with reddish-brown hair and blue eyes, looking slightly to the right. She is wearing a dark top and a long, thin necklace with a small pendant.

Swann Named ISE Council Chair

Department head Julie Swann will be the 2022 Chair of the Institute of Industrial and Systems Engineers (IISE) Council of Industrial Engineering Academic Department Heads (CIEADH). Her election shows the dedication and commitment Swann has led to improving the industrial engineering field.

Beginning at the May 2021 IISE meeting, Swann will be the CIEADH Chair-elect for one year, where she will serve under this year's CIEADH Chair, Sunderesh S. Heragu from Oklahoma State. After serving as the chair in 2022, Swann will be recognized as the Immediate past chair during her third year, starting in 2023.

What is CIEADH?

CIEADH is composed of the leaders of industrial engineering programs nationwide. As a part of the Institute of Industrial and Systems Engineers, CIEADH works to encourage interest in the industrial engineering field. They also discuss ways to improve industrial engineering education, curriculum, accreditation, student activities, research and faculty development.

FREE ALUMNI RESOURCES

The ISE Department has launched our **Alumni Resources Program** to provide you, our alumni, with **FREE** resources that will benefit you throughout your career.

These resources include:

- Private ISE Alumni LinkedIn Group (1150+ members)
- NC State Online Library Access
- ISE / OR Job Board
- Online Certifications and Professional Learning
- NC State Alumni Directory
- Alumni-Student Mentoring Program
- Ask the Pack Alumni to Alumni Program

Whether you are looking to gain a competitive edge in your career or interested in networking with ISE alumni, faculty and students, the Alumni Resources Program can help.

go.ncsu.edu/alumni-resources

UNDERGRADUATE STUDENT SPOTLIGHT

There are many stories about ISE students and faculty who knew that industrial engineering was for them from a young age, either through playing with legos or following in their parent's footsteps. But what about the people who find themselves later in life?

Enter Maria-Hunter Mackie, an undergraduate student whose entire life path changed once she discovered ISE. "I have been interested in systems design for a long time, but it wasn't until 2017 that I realized it was a field I could get a degree in," Mackie recalled. "I read up on the major and found that it fit my desire to work with people, technology, and processes to get better outcomes for the customer, worker and the company."

When Mackie finished high school, she wanted to move out of state to continue her education like many of her fellow graduates. However, she made a decision that changed everything; she took a gap year to work in the field. Once the time to apply to colleges rolled back around, her outlook on North Carolina had changed. She decided to stay in her home state, beginning her associate's in engineering at a local community college. It was there that she discovered the perfect degree.

Mackie Joins ISE

Mackie enrolled in the ISE department and joined a research experience (REU) with Ph.D. student Zach Traylor under the supervision of professor Chang S. Nam. Nam leads the research at NC State's Brain-Computer Interface Lab, focusing on human-systems engineering.

Together, they studied Brain to Brain Interfacing (B2BI), an emerging technology that allows information exchange directly between brains using neuroimaging and neurostimulation methods. At that point, B2BI researchers lacked a uniform classification for B2BI systems. So the team set out to fix that. "From the research, we noticed a lack of classifications for experimental communication loops," Mackie explained. "An interesting outcome of my semester was working with Mr. Traylor and Dr. Nam to create terminology to distinguish experiments where the feedback loop for communication used B2BI or other methods (such as a computer screen)." To speed up all future B2BI research, The team developed a system that put all B2BI systems into one of four classifications.

At the same time, Mackie applied what she had learned at the NC Undergraduate Research (NCUR) Conference and a featured article in IISE magazine. "I left the REU with new insight into how ISE could be applied to the world, a deeper understanding of graduate school and research paper writing," said Mackie. "It was a really positive experience for me, and I would recommend it to anyone considering undergraduate research."

When Mackie isn't busy researching cutting-edge technology, she's volunteering at a local nonprofit. "Pre-Covid-19 I spent those hours helping people learn how to use 3D printers, laser cutters, micro bits, and shop tools as well as mentoring a 14-person middle school FIRST FTC team - FTC 13883 the Razzle Dazzle of Fantazmagazzles," Mackie explained. "With Covid-19 I have continued to work with Razzle Dazzle and have done a small amount of laser cutting support as well. I like to read and play lots of puzzle games."

After graduation, Mackie hopes to get a job in supply chain that has a direct impact on the consumer. If her adaptable and diligent nature has shown anything, she should have no problem finding that perfect job too. ■

MARIA-HUNTER MACKIE

Maria-Hunter Macie is a senior double majoring in industrial engineering and business administration. She performs undergraduate research under the mentorship of professor CS Nam. Together they study Brain to Brain Interfacing an emerging technology that allows information exchange directly between brains



PHILANTHROPY AND SPONSORSHIP

Outside support through philanthropy and sponsorship allows us to enhance our programs. The ISE Enhancement Fund addresses one of the department's greatest needs, discretionary support. These funds allow the department head to quickly respond to these opportunities and challenges.

Mike Walsh
mpwalsh2@ncsu.edu
919.515.7237



PROJECT OPPORTUNITIES

ISE's senior design course is a chance to work with students who can analyze your proposal and provide valuable solutions.

Kanton Reynolds
ktreyno2@ncsu.edu
919.515.0605



CLASSROOM PRESENTATIONS AND LEARNING OPPORTUNITIES

You can interact with ISE students through class presentations, panels and lectures. This allows you to engage students in real-world problems and solutions.

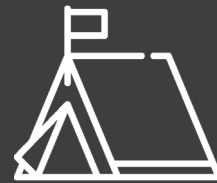
Julie Swann
jlswann@ncsu.edu
919.515.6423



SUMMER CAMP OPPORTUNITIES

You can interact with future ISE students through class presentations and hand-on exercises. This is a great way to expose students to what it's like to be an industrial engineer.

Jason Low
jclow@ncsu.edu
919.515.1424



TOURS OF INDUSTRIAL FACILITIES

Have students tour your industrial facilities. This is a great opportunity for students to see principles taught in the classroom getting put into action.

Jingyan Dong
jdong@ncsu.edu
919.515.7196



9 WAYS TO PARTNER WITH ISE

CO-OPS AND INTERNSHIPS

Co-ops and internships allow you to work with some of the nation's top students. They give you the opportunity to test a student's effectiveness and potential as a future employee. Students also benefit by gaining valuable work experience.

Julie Swann
jlswann@ncsu.edu
919.515.6423



RECRUITING

Interested in our students? We encourage you to send job announcements to the department. You can also post right on our social media channels: Facebook, Twitter, LinkedIn, etc.

Julie Swann
jlswann@ncsu.edu
919.515.6423



CAREER FAIRS

Take part in one of NC State's Engineering Career Fairs. This is a great way to enhance your company's visibility to future job candidates in ISE. To register go to <https://www.engr.ncsu.edu/careerfair/employers/>.

Brian Koehler
engineering@ncsu.edu
919.515.3263



INDUSTRY RESEARCH OPPORTUNITIES

ISE's faculty and students work with corporations and governmental agencies to perform in-context research. This research broadens knowledge and creates new methodologies.

Julie Swann
jlswann@ncsu.edu
919.515.6423



The ISE Department works with a wide network of industry partners and our alumni. Above are nine ways in which ISE and the professional community are working together for mutual benefit.

Got your own idea? We are always eager to explore new and creative ways to team up with our alumni and industry friends.


Ready to go?

Register at go.ncsu.edu/PartnerWithISE

MEM PRODUCING FEMALE LEADERS AT A SUPER RATE

NC State's Master of Engineering Management Program boasts a staggering 61 percent female population compared to the 12.1 percent women in engineering management nationally. Let's meet two of its stars.

By Kierney Leonard



The number of women pursuing STEM-based and leadership careers has continued to trend upward over the last several decades. According to the Census Bureau, the ratio of women in STEM careers jumped from eight to 27 percent between 1970 and 2019. Taking this trend to the next level, NC State's Master of Engineering Management (MEM) Program boasts a staggering 61 percent female population compared to the 12.1 percent women in engineering management nationally. Let's meet two of NC State's female leaders from MEM, Melissa Pressley and Delshad Zaker.



Since graduating with her bachelor's degree from NC State's Edward P. Fitts Department of Industrial and Systems Engineering in 2016, Melissa Pressley has worked for Duke University Health Systems. She plans to use her MEM degree to advance her career and further pursue her passion for healthcare.

MELISSA PRESSLEY

Young professional Melissa Pressley became one of the first two alumni of the MEM program, graduating over the summer. She originally graduated from NC State's Industrial and Systems Engineering Program (ISE) in 2016, earning her Health Systems Engineering Certificate. This program inspired her to work in healthcare. Having built a solid foundation of technical skills through ISE, Pressley planned to grow her leadership skills and explore healthcare through graduate school.

With a long list of MEM concentrations to choose from, Pressley chose Health and Human Systems, which married her background in industrial engineering to her passion for healthcare. "I want to be able to do something where, at the end of a career or at the end of every day, there is something that I have been working on that is going to improve the lives of other people," stated Pressley, who now works as a management engineer for Duke University Health Systems. She works on process improvements in healthcare delivery, which tackles patient issues, such as wait times for surgery. Pressley is now doing what she loves, but she had to

work hard to make it in a historically male-dominated career.

Studying and working in STEM and business fields, she admitted there had been times when she was the only woman in the room. By seizing development opportunities and building relationships with female peers and teachers in the MEM program, Pressley built the confidence to say, "Yes, I'm the only one here, but that doesn't mean my voice matters any less or that my opinion is any less valid." She furthered, "I have earned my seat at this table, now it's time for me to take advantage of it."





DELSHAD ZAKER

Coming from Tehran, Iran, where she began her journey earning an undergraduate degree in Industrial Engineering, Delshad Zaker now calls NC State home. In 2017, Zaker worked for an engineering consultant company called Middle East Water and Environment as an industrial engineer before continuing her education. With her background in engineering and a passion for leading, Zaker felt that the MEM program at NC State best fit her career aspirations.

The diverse courses, accelerated timeline, networking and leadership development opportunities

attracted her to study engineering management at NC State. Currently halfway through the program's on-campus curriculum, Zaker plans to work in manufacturing or healthcare once she graduates in 2022. The global pandemic sparked her interest in healthcare, and her creativity contributed to her desire to pursue manufacturing. Regardless of which career path she chooses, Zaker feels prepared to lead.

Growing up, she has always had the instinct to lead. Despite leadership positions being male-dominated, she hopes more women step up.

Since graduating with her bachelor's degree from Islamic Azad University in 2016, Delshad Zaker has worked for Middle East Water and Environment. She plans to use her MEM degree to advance her career in the manufacturing or healthcare fields.

"I think it is very important that we work in this field more and [take on leadership positions]. We have to for the next generation. [Men need to know] they can count on us like themselves," Zaker explained. She encourages women to join programs like engineering management to find their place as leaders in society. ■



Karen Chen, assistant professor, will use the \$1.3 million NSF research grant awarded to improve students' understanding of the extremes of scale.

CREATING A VIRTUAL ENVIRONMENT TO COMPARE

How much is a billion? How tiny is an atom? These seem like simple questions, but people of all ages struggle to conceptualize extreme sizes and scales. However, sizes, scales and powers of 10 (10x) are fundamental subjects in STEM. When ISE assistant professor Karen Chen heard of this challenge, she knew that VR could help bring the hard to visualize items into view. The National Science Foundation (NSF) has awarded Chen and her team a \$1.3 million research grant, allowing them to use virtual reality to improve students'

understanding of the extremes of scale in STEM.

"Conceptualizing extreme scales and sizes have been a well-documented challenge in the education literature," Chen explained. However, the subject is a crucial one to understand in STEM fields. "Given many

"Conceptualizing extreme scales and sizes have been a well-documented challenge in the education literature."

STEM fields have to deal with entities and ideas at the extremes of scale, it is critical for students to develop accurate conceptions of scales that exist well beyond their everyday experience of the world," Chen stated. An inaccurate understanding of size and scale can make it hard to apply concepts in the real world, and

SIZES, _sCALES and POWERS of 10

E EXTREME SIZES

not understanding subjects can also become a barrier to STEM for students.

As a solution, the team will create "Scale Worlds," a new immersive virtual environment showing scientific entities of different sizes. Students can enter one of 31 distinct environments and see incredibly small and unbelievably large objects in relation to their bodies, like the difference between molecules and cells or the sun and the moon. This project allows students to make realistic comparisons and understand the concept of

sizes, scales and powers of 10, which are impossible to make in everyday life. "Since VR enables us to visualize practically anything we could render using a computer, we thought it would be a great approach to help students conceptualize extreme scales," Chen said.

Chen is working with faculty from the College of Education and College of Design. "I am very excited about this

collaboration with experts outside of the engineering field," she stated, "Scale Worlds is truly a transdisciplinary research project." How much is a billion? and how small is an atom? will be much easier questions to answer, thanks to Karen Chen and her team. ■



The virtual reality controller and headset are used to experience virtual environments

AWARDS and HON



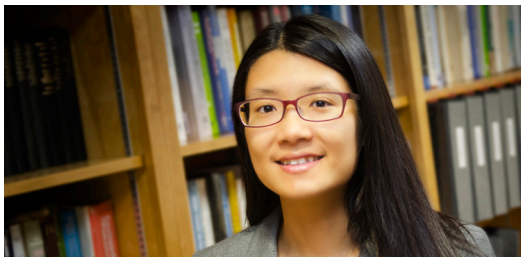
JEFF HOYLE

JEFF HOYLE, Director of Ergonomic Services at the Ergocenter, received an **Outstanding Extension Award** from **NC State's Office of Outreach and Engagement**. He earned this award for his leadership in the field of ergonomics and his passion, dedication, and drive to educate and assist others in making the workplace safer. Hoyle also received the **Creativeness in Ergonomics Practitioner of the Year Award** at the **Applied Ergonomics Conference** for his achievements in the creative application of ergonomics.



ROHAN SHIRWAIKER

ROHAN SHIRWAIKER, associate professor, received the **2021 Graduate of the Last Decade (GOLD) Award** from the **Penn State Industrial and Manufacturing Engineering Society** in collaboration with the **Harold and Inge Marcus Department of Industrial and Manufacturing Engineering**. He received this award for demonstrating successful early career development and achievements.



KAREN CHEN

KAREN CHEN, assistant professor, received the **Young Investigator of the Year Award** from the **Applied Ergonomics Conference**. She won this award because of the outstanding contributions she is making to the ergonomic field through her applied research.



KANTON REYNOLDS

KANTON REYNOLDS, Director of Undergraduate Programs, won the **COE Award for Excellence** from **NC State**. He received this award for improving efficiency and innovation both in the ISE department and at the University.

BINIL STARLY, James T. Ryan Distinguished Professor, received a **2021 SME Journal of Manufacturing Systems Reviewer of the Year Award** from the **North American Manufacturing Research Institution of SME**. The award, given out since 2018, recognizes high-performing reviewers for their critical review and oversight.



BINIL STARLY

IORS



XU XU

OLA HARRYSSON, Fitts Distinguished Professor, received the **International Freeform and Additive Manufacturing Excellence Award** from the **Solid Freeform Fabrication Symposium** in August. The award is given out at the International Solid Freeform Fabrication Symposium and recognizes an outstanding researcher in the field of freeform/additive fabrication.



OLA HARRYSSON



KATE MOORE

KYLEE ALONS

Kate Moore, senior, and **Kylee Alons**, junior, were named to the **All-ACC Swimming and Diving Academic Team** by the **Atlantic Coast Conference**. The two ISE stars are no strangers to winning All-ACC academic honors as this is the third for each.

XU XU, assistant professor, received an inaugural **Goodnight Early Career Innovator Award** from **NC State's Provost's Office**. He earned this award for his cutting-edge work in biomechanics, as well as his academic achievements and teaching excellence. Xu also won the **2021 C.A. Anderson Outstanding Faculty Award** from the **ISE Department**. The winner of this award is determined by student voting.

CHANG "CS" NAM, professor, received **Fellow Status** from the **Human Factors and Ergonomics Society (HFES)**. Fellow is the highest recognition bestowed by the HFES and given to recognize outstanding achievement, consistently superior professional performance, exceptional contributions, personal service to the Society, and other meritorious accomplishments.



CHANG "CS" NAM



NATALIA SUMMERVILLE

NATALIA SUMMERVILLE, lecturer, received a **2021 CEO Award of Excellence** from **SAS**. Summerville was nominated by her peers for living out SAS's values each day.

SENIOR DESIGN

Advance Auto Parts

Sidney Allen, Rebecca Rowen, Rachel Sykes, Gabrielle Tonsay and Nathan Woelfel

Advance Auto Parts wanted to improve its marketing efforts towards its commercial customers and optimize its inventory management. The senior design team analyzed four years of customer data to determine any buying patterns. Once the data was cleaned, they discovered seasonal buying patterns across all matches. They placed the vast majority of the customers into eight pervading clusters, improving customer relations, decreasing inventory costs, and increasing revenue.



Biogen

Maks Bezruchko, Quesinberry, Da, Christine Wilkin

Biogen wanted to d alternative supplier and money in the e researched local sup help determine the with a new supplier how a new supplier



City of Raleigh - A

Rana Farawi, Connie Feinberg, Tess Garrison, Matthew McMillan and Samantha Nagle

The City of Raleigh added License Plate Recognition Software (LPR) to its parking enforcement operations. But, it lacked the procedures for the drivers of its LPR-equipped vehicles to maximize their LPR usage. The senior design team created dynamic routes to optimize parking enforcement around NC State University and Downtown Raleigh. The team also streamlined communications between the department and the LPR technology provider, Genetec, to significantly improve the enforcement process. Lastly, the team made recommendations on how to measure and incentivize driver performance.



City of Raleigh

Jessica Berlin, Hannah Kosze, Mansdoerfer and Connor Pat

The City of Raleigh wanted to add n its Citrix Cycle Bikeshare Program in studied areas, Five Points and Missi lacked a tool to select locations for t stations in those areas, which waste station siting process. The senior de a dynamic decision matrix that incor various sources to produce the opti in the predetermined areas. City pla tool in the future to increase the pro

Manhattan Associates

Daniel Cockson, Emily Cooke, Rahul Dhawan, Matt Izzo, Anthony Szanfranski

Manhattan Associates wanted to improve client satisfaction and performance of its trucking supply chain division. They needed a tool that was compatible with its Profit Analyzer Tool and would reduce the time spent on cost model creation and maintenance process by 15 percent. Using Microsoft Excel, the student team built a template with five built-in VBA macros that automated the cost modeling process. They reduced the cost model initialization time by more than 50 hours and the monthly maintenance time by more than five hours per week. Their efforts led to a 25 percent time reduction and \$50k in potential new client income.



NC State College of Veterina

Ben Boyd, Sohil Doshi, Julia Peters and Toofan Salahuddin

The NC State College of Veterinary Medicine used time-consuming Google Forms to capture request their principal investigators. Also, the investigator not duplicate, make minor changes and resubmit when they were completing a project again. Adding inefficiencies was a general lack of communication awareness of the Lab Animal Resources (LAR) we After completing a thorough voice of customer a student team created a Vet Services Form Prefiller saves 30 minutes per submission. They added dr menus and redesigned the Forms page, which inc user-friendliness by 32%.

SPONSORS | ENGINEERING DESIGN DAY

**D, Jackson Holt, Nicole
David Rowland and
S**

determine the feasibility of using an
for critical filling line parts to save time
event of a part failure. The student team
pliers to find the one best-equipped to
feasibility of part replication. Working
, the team quantified and demonstrated
could replicate the parts.

BOSCH

**Warren Babb, Alissa Boggs, Jake Castelino, Sarah
Gerkin and Rupen Singer**

The Bosch Dish Care manufacturing facility in New Bern, NC,
wanted to reduce its high vehicle traffic caused by material
demands and delivery cycle times. The student team analyzed
the current schedule and created a simulation model to
determine the optimal program based on the decision matrix,
which reduced each vehicle's time in the system.



h - B

**egi, Katja
tterson**

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s time spent on the
design team created
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mal station locations
anners can reuse this
process's efficiency.



John Deere

**Troy Bowman, Tiger Kaovilai, Andrew Martin, Ryan
Winz and Tina Yang**

John Deere wanted to improve its data collection and analysis
process to determine safe lifting standards and protect
workers from musculoskeletal injuries. The senior design
team researched possible solutions and decided a web-based
ergonomics assistance app was the best option. They also
made recommendations for future improvements to the
software and process itself.



ary Medicine

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Pfizer - A

**Rachel Bricker, Catherine Chirichillo, Annemarie
Marshall, Matthew McGovern and David Trombley**

Pfizer's instrument management and acquisition process in its
Rocky Mount quality laboratory was disjointed and lacked a
digital data management platform, wasting time and money
and risking violating Good Manufacturing Practices. The senior
design team recommended key data metrics based on Pfizer's
goals, proposed a data collection method to track these metrics
and suggested an accessible visualization method for the data.



Pfizer - B

Georgia Burgess, Nicole Gorrell, Madelaine Hiriak, David Labrador and Jackson Proctor

Pfizer wanted to reduce the costs and eliminate the non-value-added time of its manual pH data collection process at its Rocky Mount facility. The student team developed programs to automate the data collection process and store the information in a centralized database. Additionally, they provided an SOP and rollout plan to ease the transition from a manual to an automated process.



Root Causes

Sidney Allen, Rebecca Rowen, Rachel Sykes, Gabrielle Tonsay and Nathan Woelfel

Advance Auto Parts wanted to improve its marketing efforts towards its commercial customers and optimize its inventory management. The senior design team analyzed four years of customer data to determine any buying patterns. Once the data was cleaned, they discovered seasonal buying patterns across all matches. They placed the vast majority of the customers into eight pervading clusters, improving customer relations, decreasing inventory costs, and increasing revenue.



Vanguard Furniture

Harrison Johnson, Chris Pennella, Steven Rehard and Taylor Seeling

As part of its 5-year automation plan, Vanguard Furniture wanted to add new machinery and design an ideal future state layout using lean methodologies. The senior design team conducted a root cause analysis to determine the shop areas most affected by waste. They then created a simulation model to support purchasing a new CNC router and validate machinery and shelving relocation. The model also gave valuable data on reducing non-value-added travel, improving worker utilization and increasing profits by adding the new machinery.



West Pharmaceuticals

Ahmad Awamleh, Dennis Estevez and Karl Soliman

West Pharmaceuticals wanted to increase its production of components for distributing the COVID vaccine to meet the high demand. But, it needed to determine where additional resources would have the most significant impact on their production rates. The senior design team created current state value stream maps to identify bottlenecks in the top five running product lines. Based on their analysis, the team proposed solutions to balance the production lines and decrease non-value added time across the manufacturing process.



ADVISORY BOARD 2021

Board Chair's Notes - October 2021

Before I introduce myself, I want to thank the outgoing advisory board chair, Gayle Lanier, for her long-standing service to the ISE department. I know I speak for everyone when I say, "Thank you, Gayle, for your continued service and dedication not only to ISE, but the College and University as well over these many years."

Now, just a bit about me. My name is Stuart Nisbet, and I received my bachelor's degree from NC State in computer science way back in 1987. Currently, I am the Chief Data Scientist at Cadient Talent. Before that, I had a 30+ year career at SAS, where I started in the computer graphics division. SAS allowed me to pursue my passion for data visualization and computer graphics which led me through many roles to finally become the Senior Vice President, Global Head of R&D. So, as a CompSci graduate with a focus on analytics, why have I been a member of the ISE advisory board for the last four years? Very simply, in my career, I have not seen any academic discipline have a more significant and broader impact on our world than ISE. But that's enough about me. Let's talk about our beloved ISE department.

Speaking on behalf of the ISE advisory board, I want to thank those who competed in this year's Day of Giving. We put our money where our mouths are by joining the challenge to make 150 gifts to the department, and you certainly did not disappoint, finishing with a total of 221. Again, thank you for your generosity and support.

Like my predecessors, I encourage everyone interested in industrial and systems engineering at NC State to find a way to get connected. As part of the new Alumni Resources Program, the department created an excellent "how to volunteer" web page (<https://www.ise.ncsu.edu/engagement/volunteer-alumni-engagement-nc-state-ise/>) that explains all the non-monetary ways you can give back. The web page has an FAQ section that answers many of your questions about getting involved. If you find something that fits your interests, we warmly welcome your partnership.

GO PACK!

Stuart Nisbet, BSCSC 1987

The ISE Department receives valuable input from its advisory board. The board maintains and fosters relationships with students, faculty, the Dean of the College of Engineering, the community and alumni. The advisory board meets each semester.



Stuart Nisbet

BSCSC, NC State 1987

Chief Data Scientist at Cadient Talent



Tony Blevins

BSIE, NC State 1989

ISE Distinguished Alumni 2018

VP of Procurement at Apple, Inc.



Larry Bowman

BSIE, NC State 1973

ISE Distinguished Alumni 2008

Principal with Bowman Investments, LLC



Damon Butler

BSIE, NC State 2002

President at Triangle Blvd

President at Intelligency



Cheryl Doninger

MCS, NC State 1986

Senior Research & Development Director at SAS



Candance Gingles

BSIE, NC State 1987

Director of Quality Engineering at Pfizer



Carlos Gonzalez

Ph.D., NC State 1995

ISE Distinguished Alumni 2019

Dean, Polytechnic University of Puerto Rico



Jiao Gu

Ph.D., NC State 1992

ISE Outstanding Young Alumni 2016

President, CEO and founder of FEI Systems



Rashida Hodge

MSIE, NC State 2002

ISE Outstanding Young Alumni 2018

Vice President at IBM



Jeffrey Johnson

BSIE, NC State 1978

ISE Distinguished Alumni 2017

Owner of JWWJ Energy



Gayle Lanier

BSIE, NC State 1982

ISE Distinguished Alumni 2007

Senior VP and CCO of Duke Energy (Retired)



Leon McGinnis

Ph.D., NC State 1975

ISE Distinguished Alumni 2006

Professor Emeritus at Georgia Tech



F. Scott Moody

BSIE, NC State 1980

ISE Distinguished Alumni 2015

Co-founder and CEO of K4Connect



Patrick Murray

BSIE, NC State 1988

Director, Global Consumer Sales Development, Intel Corporation (Retired)



David Parker

MSM, NC State 1996

Co-founder and CEO of Dexios

Co-founder and CEO of ServeMore



Juli Trexler

BSIE, NC State 1997

ISE Distinguished Alumni 2017

VP, Global Business Partner Channel Sales

DONOR LIST

The Edward P. Fitts Department of Industrial and Systems Engineering at NC State is grateful to our donors for their generous support. This list represents donations between **July and December of 2020**. While we make every effort to be accurate and thorough, it is possible to accidentally omit or misspell a name. Please contact 919.515.7237 with any additions or corrections.

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Fitts-Woolard Hall Dedication Event

Join the ISE Department and fellow alumni during NC State's 2021 Red and White Week for a dedication event for Fitts-Woolard Hall including speakers and tours of the building.



Join Us Friday, Oct. 29, 2021 at 1 pm

Join Chancellor Randy Woodson, Dean Louis Martin-Vega, colleagues and friends for a dedication ceremony followed by tours of the building.

This fall, join your fellow Wolfpack industrial and system engineers for Red and White Week, Oct. 24-30. More than a traditional homecoming, it's a week that captures everything our students, faculty, staff, alumni and friends hold dear about NC State. As a community, we'll celebrate the dedication, resilience and generosity NC State alumni have shown to the University, especially to our department.

Homecoming is extra special this year for our alumni along with those from the Department of Civil, Construction, and Environmental Engineering and the Edward P. Fitts Department of Industrial and Systems Engineering — as we have settled into our new home in Fitts-Woolard Hall. The state-of-the-art building officially opened in August 2020 with generous support from alumni and friends of the University.

All College of Engineering alumni are invited to a special dedication, celebration and tours of this extraordinary, state-of-the-art space that emphasizes "engineering on display."

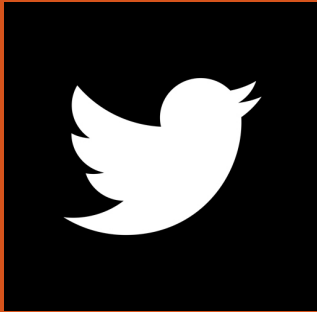
Featured Events

This Red and White Week, start with an address from Chancellor Randy Woodson, stop by to see the new Fitts-Woolard Hall, and end your week cheering on the Pack at Carter-Finley Stadium.

- **Chancellor's Address**, Monday, Oct. 25
- **Homecoming Parade**, Friday, Oct. 29
- **NC State vs. Louisville**, Saturday, Oct. 30



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so we can see the great
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NC State Industrial and Systems Engineering @NCStateISE · Sep 7
TEN TIPS TEN DAYS #10 | Everyone Loves Top 10 Lists (just look at WatchMojo). Make one of the companies you wanna check out.

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go.ncsu.edu/CareerFairTips



10 WAYS TO OWN THE CAREER FAIR

#10 Everyone Loves Top 10 Lists

go.ncsu.edu/CareerFairTips



NC State Industrial and Systems Engineering @NCStateISE · Aug 26 ...

We can't wait to see everyone tomorrow at the graduation reception! The event will be located in the tents outside Fitts-Woolard Hall on the Oval. Don't forget to claim your special event parking permit if you plan to park on campus.



NC State Industrial and Systems Engineering @NCStateISE · Aug 19 ...

Watch ISE's Maria Mayorga talk with CBS 17 about the effectiveness of masks and COVID testing in schools: ow.ly/1f8Q50FUqJ9



NC State Industrial and Systems Engineering @NCStateISE · Aug 3 ...

For today's [#TuesdayTip](#) we're talking about expectations. As in, "What is expected of me when I volunteer?" SPOILERS: Not much! Find the full answer and many more at ise.ncsu.edu/engagement/vol...
Your questions are great, keep asking them in the comments!



NC State Industrial and Systems Engineering @NCStateISE · Jul 19 ...

The ISE Department reunites at Fitts-Woolard Hall!





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INDUSTRIAL AND SYSTEMS ENGINEERING

North Carolina State University
Campus Box 7906
Raleigh, NC 27695-7906
www.ise.ncsu.edu



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Let's get started!

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