

Attracting Industries to the Region Through Preparation of a High-Skilled Workforce.

The Department of Engineering and Technology Management (formerly AET) has in the last two decades embarked on a multi-pronged effort to advance the economic development of MSU's service region through developing partnerships with industry, co-operative education-internship programs, Industrial Advisory Board, and providing consulting services.

It is well-known that a major factor in attracting industry to a region is the availability of a well-educated workforce at all levels, from entry-level to engineering and supervisory personnel. From the brief review of the School of Engineering and Computer Science (SECS) role in supporting industry in our region, it is clear that Morehead State University can encourage even more industries to locate in Eastern Kentucky, should additional support become available to maintain and augment the continuation of this vital mission for our region.

The SECS faculty continues to prepare students with advanced skills in Computer Science, Computer Engineering, Data Science, Cyber Security, Mechanical and Manufacturing, Design, Simulation and Animation, Electronics and Computer, Civil Engineering and Construction Management as well as Robotics, Six Sigma, OSHA, and Fanuc Certification.

The 21st Century Center for Manufacturing Systems, established through the matching grant of the James Graham Brown Foundation (JGBF) of Louisville and the SECS Advisory Board companies, has been further developed through the NSF-EPSCoR project Advanced Manufacturing Partnership for Enhanced Robotics and Structure. The faculty plan to offer certification workshops to teach cutting-edge technologies and conduct applied research in order to aid technology transfer from the University to industries.



Continuing our outreach and recruitment efforts, we hosted the 25th annual Technology Student Association (TSA) regional competition on Friday, March 4th. Attendees included 230 students and 15 faculty advisors from 10 regional high schools and one middle school, including Fleming County High School, Highlands High School, Mason County High School, Morgan County High School, Rowan County Senior High School, Bryan Station High School, Breathitt County High School, Carter County Career and Technical Center, Russell Area Technical Center, Raceland-Worthington High School, and Raceland-Worthington Middle School TSA chapters.

The SECS advisory board companies have aided our efforts to improve and modernize through their active involvement in advising on curriculum, and they have come together to endow a merit-based advisory board scholarship.

Sincerely,
Ahmad Zargari
Professor and Associate Dean
School of Engineering and Computer Science

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FACULTY spotlight



Cheng Cheng

Dr. Cheng's papers "Optimization of ACEK-enhanced, PCB-based biosensor for highly sensitive and rapid detection of bisphenol A in low resource settings" and "Capacitive Aptasensor Coupled

with Microfluidic Enrichment for Real-Time Detection of Trace SARS-CoV-2 Nucleocapsid Protein" are published on Biosensors and Bioelectronics (Impact Factor: 10.62) and Analytical Chemistry (Impact Factor: 6.986). His book chapter "AC Electrokinetics-Enhanced Capacitive Virus Detection" is also available on SpringerLink now. This book chapter is in Professor Mohamad Sawan's book "Handbook of Biochips: Integrated Circuits and Systems for Biology and Medicine". It provides a broad survey of the field of biochips, including fundamentals of microelectronics and biomaterials interaction with various, living tissues, as well as numerous, diverse applications.



Sherif Rashad

Dr. Sherif Rashad has co-authored a research paper with the URF student, Jon Jenkins, on "An Innovative Method for Automatic American Sign Language Interpretation using

Machine Learning and Leap Motion Controller". The paper was presented and published as a full paper in the proceedings of the IEEE 12th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (IEEE UEMCON 2021), December 1-4, 2021. The paper was presented by Jon and he received Best Presenter Award from IEEE UEMCON 2021.

Dr. Rashad was invited as a guest speaker in February 2022 to give a talk for the Computer Science and Engineering Ph.D. Seminar at the University of Louisville. The talk was on "Machine Learning Models for Activity Recognition and Behavior-based Authentication of Smartphone Users".



Heba Elgazzar

- Dr. Heba Elgazzar has co-authored a research paper with the URF student, Dalton Hensley, on "Classification of Stroke Victims through Supervised Machine Learning Algorithms and Ensemble Learning". The paper was accepted

for oral presentation and publication as a full paper in the proceedings of the 2022 IEEE 12th Annual Computing and Communication Workshop and Conference (IEEE CCWC 22), January 26th – 29th, 2022.

- Dr. Elgazzar's student, Dalton Hensley, presented their research on "Classification of Stroke Victims Through Ensemble Learning and an Exploration of Various Supervised Machine Learning Algorithms" at the 2022 Posters-at-the-Capitol held on March 3rd, 2022.

- Dr. Heba Elgazzar has received another instructional mini-grant from Morehead State University in Fall 2021. The grant was used to purchase new servers for instructional use for the students in the Computer Science program.

- Dr. Elgazzar was invited to serve as a Session Chair and as a Member of the Technical Program Committee of the 11th IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (IEEE UEMCON 2021), December 1st - 4th, 2021. The session was on topics related to File and Storage Systems and Artificial Intelligence.

- Dr. Heba Elgazzar has co-authored a journal paper with the URF student, Kyle Spurlock, on "Novel Applications for Regression in COVID-19 Statistical Prediction" that was submitted to the Advances in Computational Intelligence (ADCI) Journal, Springer, and it is currently under review.

- Dr. Elgazzar has co-authored a journal paper with the URF student, Kyle Spurlock, on "A Genetic Mixed-Integer Optimization of Neural Network Hyper-Parameters" that was submitted to the Journal of Supercomputing, Springer, and it is currently under review.



ADVISORY BOARD spotlight

Mark Hogge



Mark Hogge is a graduate of Morehead State University (MSU) where he was in the Pre-Engineering Program. While at MSU, Mark was able to make some lifelong friendships including several while living in Cooper Hall. In 1997 Mark graduated from The University of Kentucky where he earned a B.S. in Chemical Engineering. After graduating from UK he received a BS in University Studies from MSU.

After his graduation from the University of Kentucky he worked at Honeywell Process Solutions as a Controls Engineer working on DCS systems and PLC's. In 2000, Mark joined Middough Inc. where he has gained over 20 years of experience in chemical and refining industries and more than 10 years of experience in project management. He is specialized in control system installations and implementation but is very comfortable working with engineering, maintenance and construction personnel on projects involving any discipline. Mark is the Client Account Manager (CAM) of the Marathon account. As

such, he is responsible for all Middough work that is done for Marathon regardless of the location.

Mark has been an Advisory Board member for many years at MSU and enjoys critiquing several senior presentations. Mark has also attended several career fairs and Middough has been able to hire a few fellow MSU graduates. He has been active with the University of Kentucky Alumni Association and the UK College of Engineering Alumni Association. In 2017 he received the University of Kentucky Alumni Association Distinguished Service Award.

In addition to his involvement at his Alma Maters Mark has proudly been the KSPE (KY Society of Professional Engineers) Ashland MATHCOUNTS Chapter coordinator for over 15 years and that is currently the Kentucky MATHCOUNTS State Coordinator. He received the 2014 KSPE MATHCOUNTS Outstanding Contributions award.

In his personal life, Mark resides in Catlettsburg Kentucky with his wife (Lisa) and youngest daughter Erica Balmer. His oldest daughter Brittany (Balmer) Boyd is a recent MSU graduate with a degree in convergent media. Coincidentally, Brittany also lived in Cooper Hall during her first year at MSU!



Steve Defazio - Advisory Board Chair

Steve joined North American Stamping Group in January 2018 and is currently the Vice President of Operations. His responsibility includes strategic and tactical oversight of 10 manufacturing divisions generating \$450M in revenue.

Steve started his career as a Process\Electrical Engineer and his passion for data analytics steered him into quality engineering where he spent time as a QE and in quality management. After being introduced to the TPS in 1998, he was convinced there was a more efficient way to manufacture product with quality at the center. His commitment to this ideology allowed him to be promoted to Business Unit Manager with Cooper Standard Automotive. He continued his discipline in learning TPS and took the Manufacturing Manager's position with KDMK in 2008. For the next 2 years he spent time in Japan learning the Monozukri DNA of TPS. In 2010 he was promoted to SR. Manager of Operations where he led Operations and

Engineering functions. In 2012 Steve was promoted to Vice President responsible for Kyosan Denso North America and FDM growth in North and South America. Prior to joining NASG, Steve was Executive Vice President for Takumi Stamping located in Fairfield, OH. Steve had operations responsibility for Takumi's three plants in North America.

Steve received his Executive Leader Certificate from Ivey Business School at Western Ontario University in 2019 by completing the Executive leadership program combined with studies in Financial Business Planning and Strategic Negotiations. Steve is a two-time graduate of MSU earning his Bachelors in 1996 and Masters in 2001. He is also an ASQ Certified Quality Engineer (CQE), and a Certified Design for Six Sigma Black Belt. In 2009, Steve was recognized by his Peers in Japan as a Denso Advanced level three TPS Trainer.

In 2013 Steve received the ATMAE Industry Innovation Award at its National Conference in New Orleans, LA. It was awarded due to his demonstrated leadership to minimize losses while contributing to productivity enhancement through process improvement founded on TPS principles. Steve was the 2016 Morehead State University College of Business and Engineering Outstanding Alumni recipient due to his ongoing professional growth and achievements in industry.

ADVISORY BOARD spotlight

Craig Jackson



Mr. Jackson, founder and owner of Machine Time Inc., is a Master Machinist and Artisan from Owensboro, KY. He started working with his father in the family machine shop when he was 12 years old and has developed his machining capabilities for over 4 decades. Mr. Jackson has held jobs as a machinist, a fabricator, an industrial design engineer, an industrial instructor (7 years at KCTCS), and holds a degree

in Machine Tool Technology from Western Kentucky University. He also holds certifications in Methods Time Management, Six Sigma and Lean Manufacturing.

A lifelong inventor and entrepreneur, Mr. Jackson's first major success was in 2008 when he built a company called Easy Wood Tools. He had designed a line of carbide tools and accessories for the woodturning market that made entry into woodturning available to everyone. Easy Wood Tools was created as a means of manufacturing and distributing these transformative tools to both the national and international markets. This company was the culmination of a lifetime of experience in design, metalworking, cutting knowledge and process flow. In addition to the daily leadership of Easy Wood Tools, Mr. Jackson used his machining and woodturning expertise in leading new product design and development for the company. Within a few years the Easy Wood Tools brand grew exponentially, showcasing Mr. Jackson's ability to invent novel technology and teach just about anyone the techniques of wood-turning.

In 2015, Easy Wood Tools was sold to another manufacturer as Mr. Jackson wanted to move towards solving another problem in the manufacturing industry. He had spent years trying to find machine shops that could meet the changing demands and growth of Easy Wood Tools, realizing that the US manufacturing industry was lacking in its ability to keep up with the nation's supply and demand. Mr. Jackson knew firsthand the shortcomings of localized manufacturing and set his next endeavor to solve this ever-growing issue. He knew the solution would be a network of standardized Machine Shops where customers across the nation could get quality parts made on time.

In 2016, Mr. Jackson decided to build the machine shop he could never find by creating his second company (Machine Time LLC) located in Nicholasville, KY. The company was established to meet the demands of local businesses searching for a manufacturer who could scale with their own successes. Machine Time is built to partner with its customers to help them solve problems and enable their growth. Innovation is at the core of the business as they

strive to be a nationwide leader at the crux of this new-age industrial revolution.

Machine Time has made a name for itself in the metalworking industry by producing high-quality, complex custom parts across a variety of industries. With the resurgence of large retailers bringing their manufacturing back to the United States, and the growth of the US Aerospace Program, Machine Time has grown to specialize in critical, tight-tolerance parts to print for companies like SpaceX, Northrup Grumman, Rivian, Raytheon Technologies, General Dynamics and Blue Origin. As of 2021, the business has reached approximately \$2MM in annualized revenue and attracted two local investors to support its growth while driving the business' core mission and vision: to make manufacturing sexy again.

Mr. Jackson, along with the team at Machine Time, are working to revamp standardization in the machine shop industry to address issues across the country in making machined parts to print that pass inspection. Mr. Jackson is also working with the Machine Tool Technology Educators across the state to help colleges and universities provide a competent work force for the growing manufacturing demands in the US.

JSB Industrial Solutions Highlighted on World's Greatest on Bloomberg TV



JSB Industrial Solutions, INC is owned and managed by Shane Wallingford, to be a solutions provider for manufacturers tailoring to their specialized needs. It was created with the vision that good communication between all parties will provide the best answer to the problem. From Ball Mills used in pulverization to custom design of equipment or components, JSB works with clients to resolve their prevalent issues.

The company was highlighted in episode 309 of the show "World's Greatest" on Bloomberg Television. "World's Greatest!..." is an award-winning National Television Series taking viewers on a fast-paced tour around the world, featuring behind-the-scenes footage and interviews with some of the most amazing and unique companies, products, people, and travel destinations the world has to offer!

Mr. Wallingford is a graduate of MSU with a MSETM, a BSTM, and an AAS from Maysville Community and Technical College. He is a Certified Technology Manager (CTM) that has extensive manufacturing experience in the mining, paper, and fabrication industries.

ADVISORY BOARD spotlight

Daniel Risner



Daniel Risner is a 2003 graduate of Morehead State University (MSU). While there, he earned a Bachelor of Science with a focus of Industrial Engineering Technology. Daniel was named a "Who's Who Among America's College & Universities" and was also the Chapter President of SME (Society of Manufacturing Engineers). He also played 3 years of Men's Basketball as a "walk-on".

Daniel started his Manufacturing Career as a Summer Co-Op with Chef America East, Inc. (now NESTLE - makers of Hot Pockets brand foods located in Mt. Sterling, KY.) His duties with the Process Engineering group included performing data collection and focusing on minimizing waste. After graduating from MSU, he began his full-time career as a Manufacturing Engineer with Guardian Automotive Trim, Inc. (now SRG Global - A Tier 1 Automotive Exterior Trim Supplier located in Morehead, KY.)

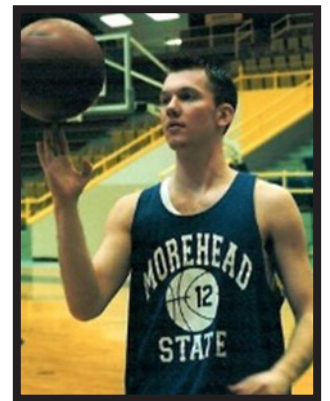
SRG Global is known as a "Full Service Supplier" being that they can Injection Mold, Paint, Plate, and Assemble their own product. They supply all major Automotive Companies, but one of their more recognizable products is the FORD F150 Grille (The Morehead plant has been supplying FORD for over 20 years). The Morehead plant has also been featured on "Modern Marvels" on the "Chrome" episode.

Guardian purchased their biggest competitor in 2008 (Siegel-Robert, Inc.). During that time, the company changed their name to SRG Global. (SRG Global was purchased by KOCH Industries in 2016)

Daniel has held various roles within the company over the years including Manufacturing Engineer, Launch Manager, and APQP Engineer.

His focus has been primarily new product launch, Potential Failure Mode & Effects Analysis, and growing the market based management culture (which is a focus on long term value creation by applying principles of mutual benefit)

Being involved in all the aspects of designing, developing, and maintaining an Automotive Program, you quickly see how that fits into running the business. As he grew from his experiences in Automotive Plastics, Daniel also started his Real Estate Investing career in 2019. He manages Town Home style rental properties with Uncle Boone's Realty, LLC in Morehead, KY. In his free time, Daniel enjoys playing golf, hitting the mountain bike trails, and jet skiing with friends at the Lake. Daniel is a member of Better Life Church in Morehead, KY.



Josh Bradley

Josh Bradley is a 2012 Honors graduate of Morehead State University (MSU), where he earned a B.S. in Computer Science and Mathematics. While at MSU, Josh was named the first Barry M. Goldwater scholar in school history. He later received an M.S. in Computer Science from the University of Maryland, College Park, where he studied applications of machine learning (ML) in the Bioinformatics field.

In 2016, Josh began his career as a Data Scientist for the United States Department of Defense (DoD). At the DoD, he developed/applied novel ML techniques over big data to discover patterns and enable analysts to make data-driven decisions with actionable intelligence. Other job activities include the research and development of state-of-the-art face detection/recognition models, being an active contributor to multiple open-source software projects in the computer vision community, and teaching junior data scientists how

to apply their work at enterprise scale. His work is currently used throughout the DoD in support of the warfighter and cyber defense operations.

In 2021, Josh became a Senior Data Scientist at Microsoft with the mission to "Empower every person and every organization on the planet to achieve more." He continues to pursue research interests in the field of deep learning (specifically computer vision and natural language processing). Daily responsibilities cover all aspects of building deep learning-enabled solutions for government customers to solve mission-critical problems. This includes problem definition; data acquisition and exploration analysis; architectural design; training, testing, and evaluating deep learning models; and production deployment on Azure, Microsoft's premier cloud platform.

ALUMNI spotlight

Chase R. Johnson



Chase R. Johnson, a native of Morehead, Kentucky, is a 2015 graduate of Morehead State University (MSU), where he earned a B.S. in Engineering Technology Management. He later received an M.S. in Engineering Technology Management from MSU.

Chase joined the Kentucky Court of Justice in 2021 and is currently the Information Security Architect. As the

Information Security Architect, he works closely with the CIO, to actively engage the Kentucky Court of Justice Leadership in operational cybersecurity issues. He designs and develops key performance and risk indicators related to the implemented cybersecurity tools that lead to the development of information security strategies, technology best practices, vulnerability management, access controls, cloud security, security architecture, and Disaster Recovery / Contingency Planning. This includes the development and delivery of IT security policies, standards, architecture, and systems to ensure data and information security across the 120 counties of Kentucky and nearly 4,000 employees of Kentucky Court of Justice. Additionally, Chase currently serves on the Information Systems Audit and Control Association (ISACA) board of directors as the Vice President of Information Technology.

Chase started his career as a systems analyst gaining knowledge of Information Technology and Security. Chase's interest in Information Technology steered him to stepping into an engineering role at the University of Kentucky Healthcare. At UK, he worked closely with the project management office and served on the Collaborative Transformation Service Strategy Council which helped

facilitate the transformation of IT service management into a strategic business asset. Additionally, Chase was elected to the University of Kentucky Staff Senate in 2018 where he served on the Bylaws Committee.

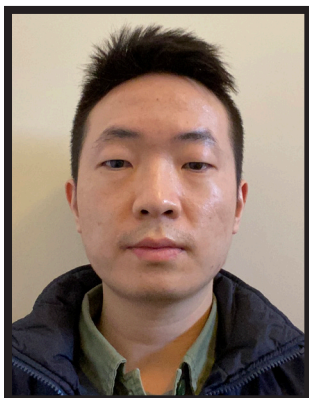
In 2019, Chase followed his passion of information security as he served as the Information Security Officer for Kentucky Bank (now Stockyards Bank and Trust). He oversaw the Bank's Information Security program and assisted in protecting the bank against cybersecurity threats. He served as the IT Steering and IT Board Chair to actively engage with Senior Leadership and Board Members to ensure that the value of Cybersecurity services are understood and implemented. He continued his discipline focusing on leading several initiatives related to Security Strategy, Security Architecture, Risk & Compliance, Security Intelligence & Monitoring, Risk and Vulnerability Assessments. Chase served as the Chairman of Kentucky Bank Incident Response Team, IT Steering Committee, and IT Board Committee. Additionally, he was a Committee Member of Kentucky Bank Risk Assessment Committee and served as the secretary for the Financial Institution Security Officers Association of Central Kentucky.

The role of Information Security Architect at the KCOJ allows Chase to utilize critical thinking skills and creativity to approach the ever evolving landscape of Cybersecurity.

Chase recently earned his CompTIA Security+ certification adding to a portfolio of certifications including, Network+, Microsoft Certified Solutions Expert and ITIL Foundations.

Chase lives in Lexington with his wife, Christa. His hobbies include golf, fishing, gardening, enjoying a weekend at Keeneland and being involved in Morehead State University Sigma Alpha Epsilon Alumni Association.

Caiwu Ding



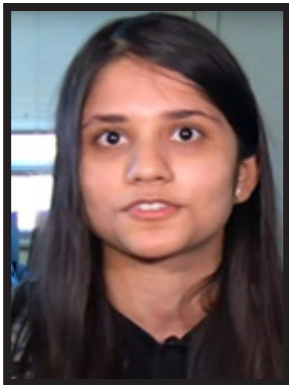
Caiwu Ding is a Research Engineer at Siemens in Princeton, NJ. He received PhD in Mechanical Engineering at New Jersey Institute of Technology and a Master of Science in Engineering and Technology Management at Morehead State University. His research lies at the intersection of artificial intelligence, controls and vehicle design focusing on the development of robotic systems with applications in autonomous vehicle and manufacturing automation.

He previously worked at Siemens Technology in Berkeley, CA where he built the first automation cell integrating Siemens PLC TIA Portal with industrial robots. He is the first author on seven top-tier journal and conference publications in a diverse range of topics from control theory to aerial vehicle design and automation systems.

For his research, he developed the first omni-directional aerial drilling/screwing system. He also serves as a reviewer for multiple top-tier journals and conferences in control, automation, and robotics.

ALUMNI spotlight

Suhana Ambol



Suhana Ambol, a Computer Science senior student, has received the Merit Certificate award for her presentation at the 2022 Annual MSU Celebration of Student Scholarship that was held recently on April 27th. Suhana has been working as an Undergraduate Research Fellow (URF) under the supervision of Computer Science faculty and her presentation was on "Malware Detection in

Smartphones Using Machine Learning and Deep Learning Techniques".

Dalton Hensley



Dalton Hensley has been accepted into the NSF Research Experiences for Undergraduates (REU) program in Computer Science and Engineering at the University of Louisville site which will be held this summer. Dalton's research explores several machine learning methodologies for classifying stroke victims using an aggregate of ensemble learning and a myriad of other supervised learning

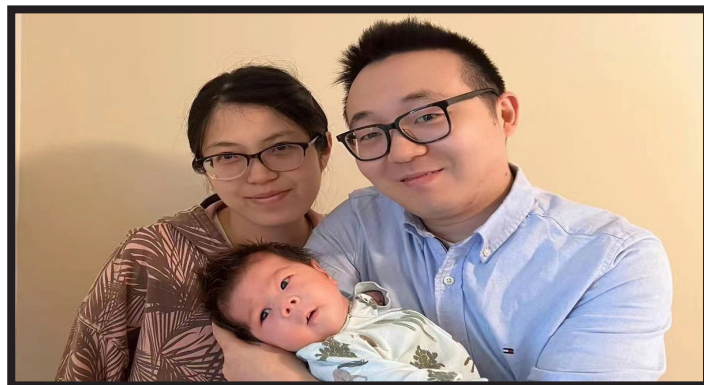
strategies. The research makes use of bagging and boosting techniques to strengthen classification efficacy. The experimental results show that conditions such as stroke can be effectively classified with considerable high accuracy and precision. The medical field could benefit from such methods to aid medical practitioners in classifying diseases and reducing the cognitive burden of independent diagnoses.

Caiwen Ding and Feng Gao

Caiwen Ding is an assistant professor in the Department of Computer Science & Engineering at the University of Connecticut. His research interests mainly focus on machine learning & deep neural network systems, privacy-preserving machine learning, computer architecture, and neuromorphic computing. His works have been frequently published in high-impact conferences (e.g., ISCA, ASPLOS, MICRO, HPCA, AAAI, ACL, EMNLP, IJCAI, SC, FPGA, DAC, ICCAD, DATE). He received the Best Paper Award Nomination at DATE 2018 and DATE 2021. He was a recipient of two USDA-NIFA awards and the 2021 UConn Research Excellence Program award.

Feng Gao was a graduate student in the Business School MSBAPM program at the University of Connecticut. She received her first master's degree from Morehead State University (MSU), Morehead, in 2016, supervised by Prof Ahmad Zargari.

She worked as a quality engineer in Fuyao Glass American in Dayton, Ohio, from 2016 to 2019. She led the Quality outgoing team receiving success from ISO9001, BIQS, and IATF16949 Audit in 2017 and 2018. She and her team also received the best team-work in 2018.



Yosselin Castro



Yosselin Castro graduated from Morehead State University in December 2019 with a Master's in Engineering and Technology Management. She was admitted to pursue a Ph.D. degree in Biosystems and Agricultural Engineering at the University of Kentucky for Fall 2022. She was offered a full-time Research Assistantship, which also includes a tuition scholarship.

Yosselin received her bachelor's degree in Chemical Engineering in Food, from Universidad Autonoma de Queretaro, Mexico. During her Master's degree, she worked as a Resident Counselor in Craft Academy at Morehead State University and also as a Graduated Assistant in the ETM department. She did an internship at SRG Guardian Company and at Lilu's Garden in KY. Currently, she is working as Quality Control Coordinator at Givaudan Mexico. Her research interests include quality management, robotics, sensory, analytics, and food science.

ZARGARI AND POZGAY ELECTED TO ATMAE LEADERSHIP BOARD



Dr. Ahmad Zargari, professor and associate dean of MSU's School of Engineering and Computer Science (SECS) and MSU alumnus Walter Pozgay (Class of 2014) were elected to board leadership positions with the Association of Technology, Management, and Applied Engineering (ATMAE).

Zargari was elected to serve as the ATMAE Board of Accreditation chair from 2021 to 2025. The ATMAE Board of Accreditation has autonomy in formulating accreditation standards for educational programs through developing and implementing accreditation policies, rules, and procedures for conducting accreditation activities and determining accreditation status.

"Dr. Zargari is an excellent choice to serve as chair of the ATMAE Board of Accreditation. He has provided service to ATMAE in numerous and important ways for a number of years now and is passionate about ATMAE accreditation," said Dr. Johnathan Nelson, dean of MSU's Elmer R. Smith College of Business and Technology. "Our programs have benefited from his knowledge of the ATMAE accreditation standards and process, and I am pleased that he will be able to support accreditation efforts across the United States and throughout the world in his new role. I am confident that Dr. Zargari will do a wonderful job as chair."

Currently, five MSU programs are accredited by ATMAE through November 2026. They are:
Bachelor of Science in Construction and Civil Engineering Technology
Electronics and Computer Engineering Technology
Mechanical and Manufacturing Technology
Bachelor of Science in Technology Management
Master of Science in Engineering and Technology Management

Pozgay was elected as vice-chair of the ATMAE Board of Directors for the 2021/2022 term. He is a Certified Senior Technology Manager through ATMAE and recently completed a two-year term as the Industry Representative on ATMAE's Board of Directors. Pozgay is a member and past chair of the Advisory Board for the SECS and holds a Certified Six Sigma Green Belt through ASQ and a Certified Industrial Electronics Technician card through ISCET and ETA-I. He currently works as a senior manager of engineering labs at GE Appliances in Louisville.

ATMAE is a professional association with more than 1,000 members who share technology, management and applied engineering ideas, research, and applications that impact the future positively. Since 1967 ATMAE members, who are college and university educators, administrators, students, and industry professionals, have been dedicated to solving complex technological problems and developing the competitive technologist and applied engineering workforce.

Kentucky Advanced Manufacturing Partnership for Enhanced Robotics and Structures Update

Kentucky NSF EPSCoR awarded Kentucky Advanced Manufacturing Partnership for Enhanced Robotics and Structures (KAMPERS) Research which is conducted by several academic institutes (UK, UofL, MSU, WKU, ECU) to develop global excellence in next-generation flexible electronics, robotics, and manufacturing technologies. At MSU, this research grant will enhance 21st Century Center for Manufacturing Systems to teach cutting-edge technologies, and conduct applied research in science, technology, engineering, and mathematics (STEM), and aid technology transfer from the University to industries that will result in economic development in the region.

In 3rd year of the project, the MSU Research Team will work on the following areas:

1. Develop the industrial control lab for condition-based maintenance (CBM)
2. Develop training modules/ workshops for the manufacturing technician workforce.
3. Mentor the research team (postdoc/research Associate and students) to develop maintenance algorithms.
4. Attend national and international conferences to disseminate research outcomes and stay up-to-date on the current state of technologies.
5. Organize, coordinate, and develop training materials for training workshops.

SECS NEWS spotlight

SECS HOSTS 25th ANNUAL EKTSA COMPETITION

Morehead State University's School of Engineering and Computer Science (SECS) hosted the 25th annual Technology Student Association (TSA) competition on March 4, 2022. Attendees included 230 students and 15 faculty advisors from 10 regional high schools and one middle school, including Fleming County High School, Highlands High School, Mason County High School, Morgan County High School, Rowan County Senior High School, Bryan Station High School, Breathitt County High School, Carter County Career and Technical Center, Russell Area Technical Center, Raceland-Worthington High School, and Raceland-Worthington Middle School TSA chapters. The students participated in different events based on the concepts covered in the students' courses in Engineering Technology Education. The purpose of this regional event is to prepare and evaluate the participating student's projects before going to the state competition. The Regional competition allows the students to improve their projects for state competition based on the feedback they receive from SECS faculty and staff.

The event began with the EKTSA regional student officers conducting the TSA opening ceremony before dispersing through the Adron Doran University Center and the Lloyd Cassity Building to compete in different events. During the competitive events, students mingled with their friends and interacted with and received feedback from the SECS faculty, staff, and student volunteers.

The Bryan Station High School chapter had an impressive performance with 14 different awards including nine first place, four second place, and one third place. Highlands High School came in a close second with thirteen different awards including five first place, four second place, one third place, and one special event award. Carter County High School students won ten awards including eight first place and two third place, while Russell Area Technical School



pulled in seven awards including two first place, two second place and three third place. Students from Raceland-Worthington High School and Fleming County High School won five awards: with Raceland taking one first place, two second place, and two third place awards while students from Fleming County received one first place and four second place award. Rowan County Senior High School received one second place and three third place awards, Breathitt County High School finished with two second place awards, Morgan County High School received two first place awards, and Mason County High School received one second place award. Raceland-Worthington Middle School garnered ten awards in the middle school events including four first place, four second place and two third place awards.

The EKTSA Regional Student Officers closed the regional competition by holding an awards ceremony and extending special thanks to Dr. Ahmad Zargari, Dr. William Grise, Dr. Steve Stubbs, Dr. Qingzhou Xu, Dr. Cheng Cheng, Police Captain and Assistant Chief Jarred Hunt and SECS staff and student volunteers for hosting and judging the events. The group also extended thanks to Engineering Consultant & Director of KYTSA Mark Harrell and Kentucky TSA State Coordinator Andy Stephenson for attending the competition and judging events.



SECS NEWS spotlight

Kentucky Advanced Manufacturing Partnership for Enhanced Robotics and Structures Update

Kentucky NSF EPSCoR awarded Kentucky Advanced Manufacturing Partnership for Enhanced Robotics and Structures (KAMPERS) Research which is conducted by several academic institutes (UK, UofL, MSU, WKU, EKU) to develop global excellence in next-generation flexible electronics, robotics, and manufacturing technologies. The mission is to advance the state-of-the-art in advanced manufacturing through the integration of synthetic biology, 3D printing, and the emerging field of printed electronics to revolutionize the capabilities of robotic manufacturing infrastructure, medical assistive robots, prosthetics, and consumer products. At MSU, this research grant will enhance 21st Century Center for Manufacturing Systems to teach cutting-edge technologies, and conduct applied research in science, technology, engineering, and mathematics (STEM), and aid technology transfer from the University to industries that will result in economic development in the region.

In 3rd year of the project, the MSU Research Team (Dr. Jenab (PI), Dr. Ortega-Moody (Co-PI), a Research Associate, two graduate students and two undergraduate students) nested in "21st Century Center for Manufacturing Systems" at MSU, work on the following areas:

1. Develop the industrial control lab for condition-based maintenance (CBM)
2. Develop training modules/ workshops for the manufacturing technician workforce.
3. Mentor the research team (postdoc/research Associate and students) to develop maintenance algorithms.
5. Attend national and international conferences (ATMAE 2021, Orlando, FL) to disseminate research outcomes and stay up-to-date on the current state of technologies
6. Organize, coordinate, and develop training materials for training workshops.

STUDENT spotlight

Latakusum Pokharel



Latakusum Pokharel, an MSETM graduate student from Nepal, completed an undergraduate degree in applied physics due to her enthusiasm for technology and physics since childhood. In her undergraduate program, Latakusum completed projects on the applications of atmospheric plasma for industrial purpose. She plans to

continue projects with real world applications during her graduate studies. She was the recipient of a grant to attend a conference in Singapore to present her paper in plasma physics but wasn't able to attend because of Covid-19. Along with her studies, Latakusum is also a resident counsellor for the Craft Academy.

Although she is away from her home country for the first time, Kentucky has the vibe of Nepal and she finds the people here to be very kindhearted and friendly. She likes to listen to music and write stories, as she has published eight novels to an online platform loved by thousands of readers.

Alejandra Figueroa Lopez



Alejandra Figueroa Lopez is in the last semester of her MSETM degree with plans to graduate in Fall 2021. Alejandra is currently working on her thesis named "A Vision-based Quality Control Model for Manufacturing Systems", with a purpose to design a model that makes use of quality

methods within a vision control system to inspect different features of test products and collect the resulting data from elaborating a moving average chart.

After analyzing the data, the consequent prognosis and diagnosis can be used to determine when a production machine will require tool replacement in order to avoid having defective products to reduce economic losses such as raw material and production shutdown.

STUDENT spotlight

Thomas Buteyn

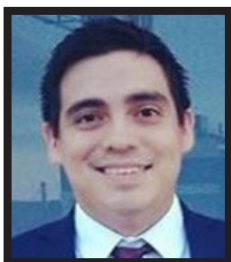


Morehead State graduate student Thomas Buteyn of Somerset is a former student member of the board of directors for the Association of Technology Management and Applied Engineering (ATMAE). Buteyn is pursuing his Master of Science degree in Engineering

and Technology Management and plans to graduate in May of 2022. As A Graduate Assistant Buteyn Assisted in teaching multiple lab sections for Dr. Grise and assists with Dr. Moody's classes as well.

Buteyn is the founder of Buteyn Technology, a robotics consulting firm formerly contracted by Arugga AI Farming out of Israel. Buteyn has been working in AppHarvest's flagship facility in Morehead KY on a pollination robot to assist in the growing of tomatoes. Currently Buteyn is a Robotics Deployment Engineer contracted by AppHarvests technology group, Tech co. He is working with experimental robotic systems to automate the harvest of small snacking varieties of tomatoes.

Andres Salinas-Hernandez

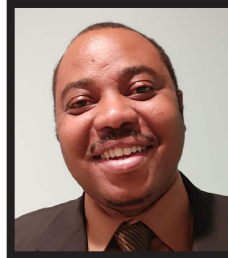


Andres Salinas-Hernandez, from Mexico, is a Research Associate in the Department of Engineering and Technology Management as part of the Kentucky NSF Experimental Program to Stimulate Competitive Research (EPSCoR)..

Andres received a Bachelor of Science degree in Mechatronic Engineering from the Technical Institute of Veracruz and a Master's degree in Automation and Sustainability Engineering from the Technical Institute of Queretaro. Before coming to MSU to complete the MSETM, Andres worked for 8 years in hospital maintenance.

His current project is the development of augmented reality scenarios with a flexible manufacturing process for automation training, with a current focus on predictive maintenance and implementation and control of dynamic systems through PID automated modules.

Lawrence Fraction



Lawrence Fraction is a graduate of Morehead State University with a Bachelors in Computer Science with a minor in Business. Continuing his education as Graduate student with the Department Of Engineering and Technology Management (DETM) he is now applying his degree to the engineering side of technology.

As a GA, Lawrence is assisting with seven labs for Dr. Cheng, Dr. Moody, Dr. Joshi, and Mr. Mason. Lawrence is using engineering and computer science to study how to make waste collection for cities more efficient, by denoting when a waste receptacle is full and signaling for pickup.

Anish Raut



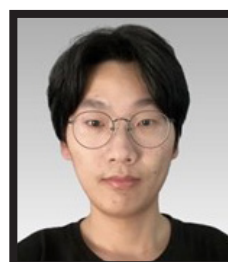
Anish Raut, an international GA and student from Nepal, completed his undergraduate degree in Applied Physics. He is currently enrolled in the MSETM due to its wide application and a deep interest in engineering and manufacturing. He is currently working on a research paper on Virtual and Augmented reality. His goal is to work with machines and robotics in the future.

Olivia Lohmeier



Olivia Lohmeier is a graduating senior at Morehead State University. She will leave MSU with a Bachelor's degree in Information Systems and Master of Science in Engineering Technology Management. During her time at MSU Olivia was a dual sport athlete as she was part of the volleyball and beach volleyball teams, helping them earn multiple Ohio Valley Conference (OVC) Championships. Upon graduating, she plans to return home to Cincinnati, Ohio to pursue a career in Cybersecurity or Technology Consulting.

Zhensen Wang



Zhensen Wang, from China, is a graduate student in the MSETM program. He graduated from Wuhan Textile University in spring 2020 with a bachelor's degree in Computer Science. He is currently working on a research paper on Portable Sensors. His duties as a GA currently include handling office routines and assisting with judging of TSA events.

The 2022 ATMAE Annual Conference will be held November 9-11, 2022 in Louisville, Kentucky at the Galt House Hotel

The Department of Engineering and Technology Management hosted the annual EKTSA Eastern Regional Competition on Friday, March 4, 2022.

The Fall 2022 SECS Advisory Board meeting will be Friday, October 28.

The Kentucky Council for Postsecondary Education (CPE) approved Morehead State University's Bachelor of Science Degree in Systems Integration Engineering (BSSIE).

FOR YOUR INFORMATION



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