

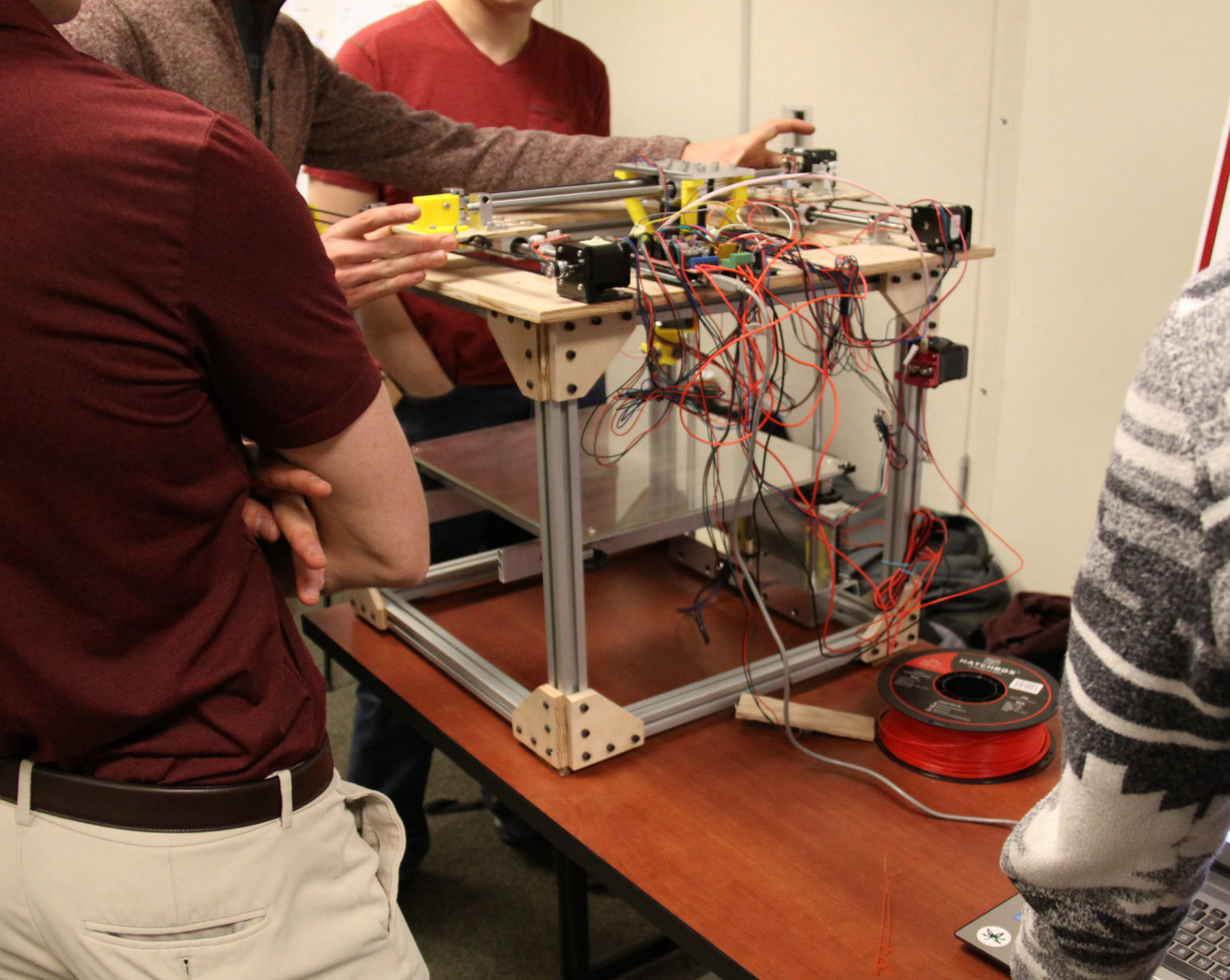
2020

UNDERGRADUATE INNOVATION



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

DEPARTMENT OF MECHANICAL
AND AEROSPACE ENGINEERING



Students put their skills to the test with senior capstone projects. The experience begins with a formal design and culminates in prototype testing.

Message from the Associate Chair for Undergraduate Programs

BLAINE LILLY

As we begin a new decade it seems fitting to look toward the future of the department. Our undergraduate programs in aerospace and mechanical engineering continue to thrive, with the average entering GPA of our students increasing every year. In our undergraduate programs, annually we currently enroll approximately 160 students in aerospace engineering and approximately 600 students in mechanical engineering. These numbers are essentially the maximum enrollment we can comfortably teach per year, so we continue to turn away about 50% of the students who wish to enroll. These students typically move to another engineering department and stay at Ohio State.

Our undergraduate curricula are recognized for the extensive opportunities they afford students to engage in experiential learning and undergraduate research. We are also seeing enhanced diversity in our undergraduate population, through increasing numbers of female students entering our mechanical engineering program

We continue to see our students receive recognition from the college, university and professional organizations. We look forward to the next generation of Buckeye engineers, including RIYA scholars, non-traditional students and all those dedicated to beginning their success stories in MAE.

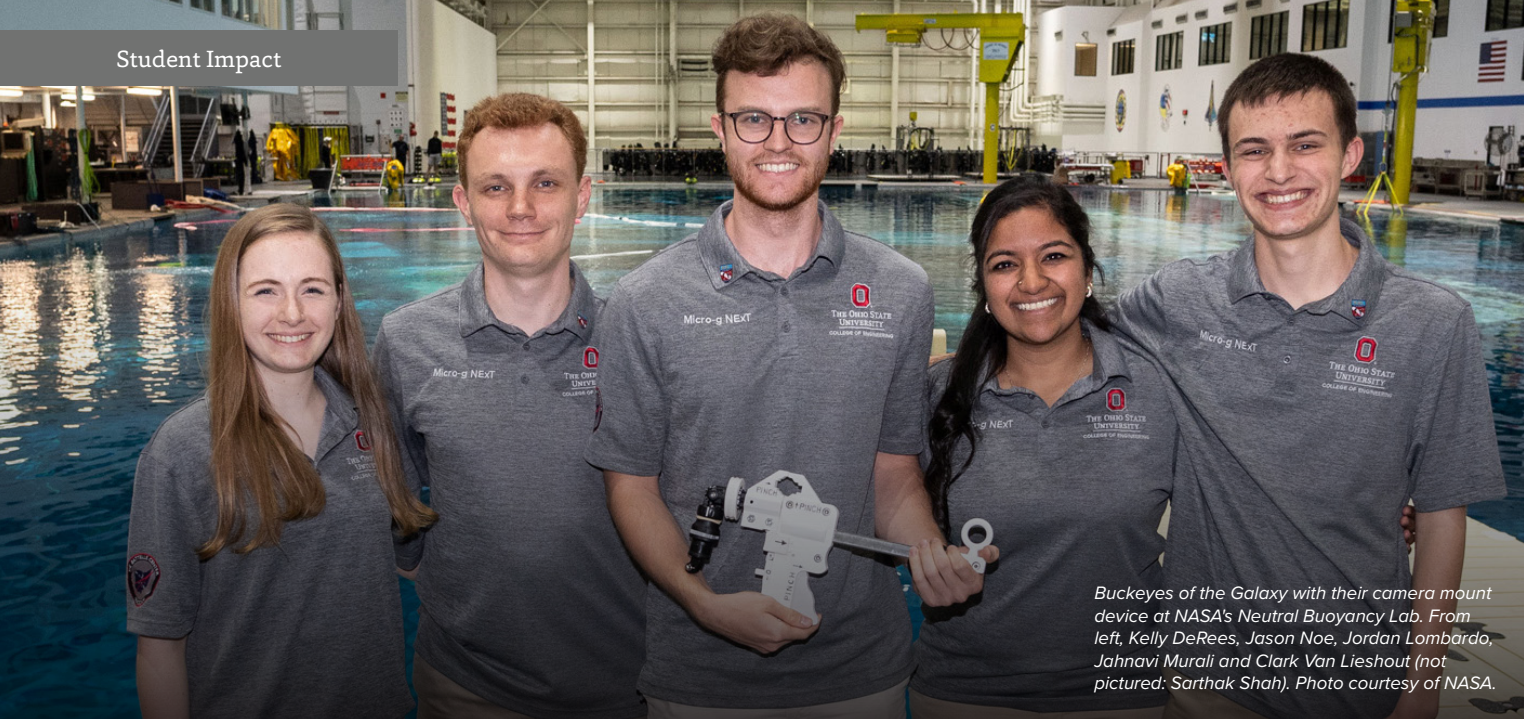
The faculty and staff of the department have given undergraduates hands-on experiences, and have been facilitators behind groundbreaking collaborations and research. As our team continues to grow, we look forward not only to new collaborations but also to new ways of teaching, fostered by our dedication to experiential learning.

I invite you to read on to learn about the accomplishments of our talented students, who continue to be our primary focus. We look forward to celebrating their further achievements in the department, and those they make as they become Buckeye alumni.



Blaine Lilly
*Associate Chair for Undergraduate Programs
Department of Mechanical and Aerospace Engineering*

Cover: Buckeyes of the Galaxy team briefs NASA divers prior to their first test with their camera mount. Photo courtesy of NASA.



Buckeyes of the Galaxy with their camera mount device at NASA's Neutral Buoyancy Lab. From left, Kelly DeRees, Jason Noe, Jordan Lombardo, Jahnavi Murali and Clark Van Lieshout (not pictured: Sarthak Shah). Photo courtesy of NASA.

Interdisciplinary student team creates out-of-this-world tool for NASA

A team of interdisciplinary students from The Ohio State University has developed a new tool that could help NASA astronauts on future exploration missions.

Buckeyes of the Galaxy was one of just 24 teams selected from across the U.S. to participate in a simulated microgravity challenge at NASA's Johnson Space Center Neutral Buoyancy Laboratory (NBL) in Houston, Texas on May 24. As part of the Micro-g Neutral Buoyancy Experiment Design Teams (Micro-g NExT) program, undergraduate students design, build and test a tool or device that addresses a current space exploration need.

The Buckeyes chose to develop a spacewalk camera

mount, one of three design challenge options. Spacewalks currently are viewed through one camera mounted on the astronauts' suits, said team member and chemical engineering major **Jahnavi Murali**. To acquire an additional view, NASA requested designs for a separate camera that astronauts can carry with them and attach to various locations on the International Space Station (ISS).

After their initial proposal was selected, the Ohio State team spent two semesters advancing their concept. There were numerous constraints to consider, one of which was the device had to be easily maneuvered by an astronaut wearing large, ski-like gloves with a limited

range of motion. NASA also had safety requirements and restrictions on size and materials that would affect the design. The team was able to print most of their materials at Ohio State's Center for Design and Manufacturing Excellence, and test their device at the Recreation and Physical Activity Center.

In May, they traveled to Houston to witness their tool being used in the NBL's 6.2 million gallon indoor pool, which simulates an asteroid's surface. For the young space enthusiasts, the experience was out-of-this-world.

"It was insanely amazing," said Murali, who participated on Ohio State's first Micro-g team in 2017 with fellow teammate **Kelly DeRees**, materials science and engineering. The team also includes **Jason Noe** and **Jordan Lombardo**, aerospace engineering; **Clark Van Lieshout**, astronomy and astrophysics; and **Sarthak Shah**, neuroscience. Neil Armstrong Chair in Aerospace Policy **John Horack** served as their faculty advisor.

Not only was the Buckeyes' device tested by NASA divers, it also was selected for an additional test by an astronaut in full spacewalk gear—one of just two devices to receive such distinction this year.

Not only was the Buckeyes' device tested by NASA divers, it also was selected for an additional test by an astronaut in full spacewalk gear—one of just two devices to receive such distinction this year.

"I will never forget the feeling that I had when I walked into that control room and sat down, and on the monitor in front of me there's an astronaut suited up holding our tool. It was the best feeling in the world," said Murali.

Both tests were successful and the team received high praise from their NASA crew, particularly on the ergonomics of the device, which was a priority during the design phase.

"One thing I love about our team is that everyone is a different discipline. And that's really cool because it

means people come with different perspectives," said Murali. "You wouldn't necessarily expect someone like me as a chemical engineer to be part of what looks like a mechanical device, but there are applications, things I can learn and ways I can contribute."

The Buckeyes of the Galaxy will incorporate the feedback they received into a final proposal they submit in late June. All Micro-g NExT tested devices are archived in a NASA database that is accessed by engineers developing spacewalk tools for future missions, which means the Ohio State camera mount could influence the design of a new space tool.

Along with gaining experience in mechanical design, experimental testing and proposal writing, another important component of the Micro-g program is community outreach. The Buckeyes conducted several STEM outreach activities at The Bridge, a local community center in Columbus dedicated to serving the needs of children of Somali immigrants.

Lombardo said the real world experience he gained from the Micro-g program has been invaluable.

"I learned things I could never learn in a classroom and made lasting connections with industry professionals and students from around the country who share my passion," he said.

by Meggie Biss, College of Engineering Communications



Improving transport wheelchairs



Team members, left to right: Megan Schaefer, Emily Payne, Chase Young and Kyle Sherrets (not pictured: Niki Glass).

the chair when transporting patients and it allowed the user or stakeholder to easily control the movement of the user's legs."

Her teammates included mechanical engineering students **Niki Glass, Megan Schaefer, Kyle Sherrets** and **Chase Young**. The students were enrolled in the year-long Product Design Capstone Course 4684, taught by **Annie Abell**.

The team began with the intent to meet three primary objectives: create a product that satisfies a problem in a real-world setting, design a product to ensure ease of assembly and analyze potential faults of the product.

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During autumn semester the team researched a variety of assistive devices and noted the challenges that patients and caregivers had with their use. They visited residential nursing facilities, assisted-living locations and a physical therapy office, and reached out to organizations, such as Age-Friendly Columbus. After selecting a project and meeting general constraints, the team built and tested a series of prototypes and created an installation guide. At the conclusion they also used design software to predict fault points and provide a recommendation for future work.

All undergraduate engineering students at Ohio State are required to complete a one- or two-semester-long capstone design project prior to graduation.

"It was great to be able to work on a project from start to finish," commented Young. **"From researching and defining the problem to developing a working prototype of the final product, it gave everyone an inside look and hands-on experience of what it is like to take an idea and make something out of it."**

by the Department of Mechanical and Aerospace Engineering

Ohio State student wins first prize at international student conference

Collin O'Neill, an Ohio Space Grant Consortium Fellow and a graduate student pursuing a master's in aerospace engineering, won the first prize in the international student conference in the undergraduate category on Jan. 6 at the American Institute of Aeronautics and Astronautics (AIAA) SciTech Forum in Orlando, Florida.

O'Neill competed against six other regional-winning contestants from around the world with his research, presentation and paper. The competition was based on several categories like quality of the presentation and paper, impact on industry and how novel the work is.

"I am very grateful for the opportunity and after seeing all the other talks, everybody there was brilliant," O'Neill said.

"It was just an honor to be among them and to be selected as the best talk."

An offset diffuser is useful because it allows the aircraft's engines to be installed inside the plane allowing for more aerodynamic efficiency and stealth.

O'Neill credited Ohio State's faculty and facilities for his success and ability to conduct the research which led to his winning presentation and paper.

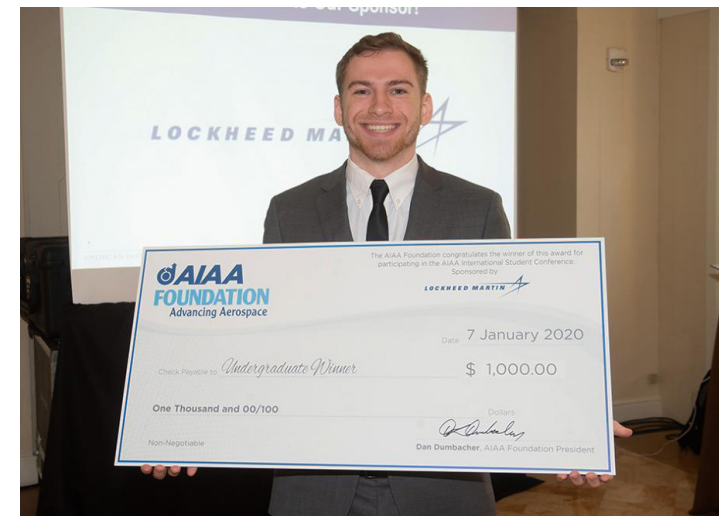
"The experimental facilities are only found in a select few places especially in academia. Those opportunities were available to me as a junior in college, which is not something you are going to find elsewhere," O'Neill said.

"The faculty we have surrounding the students, I had a great adviser who was encouraging me to get involved in all this stuff, and a research scientist who helped me keep the research going even when I couldn't always be there, who also gave me ideas on where to go and helped me through all those steps."

O'Neill's advice to other students considering doing a competition like this: seize the opportunity.

"This is one of the many opportunities that presents itself and I would say to seize all of those opportunities. The worst thing you can do when you seize one of these opportunities is fail, and you are going to learn from that failure and be better for it anyways," said O'Neill. "This is just one of those rare opportunities where I ended up being successful and I had to seize many of them before I was successful."

by Jake Rahe, Department of Mechanical and Aerospace Engineering



From gears to blood vessels: Indian scholars excel during their summer at Ohio State

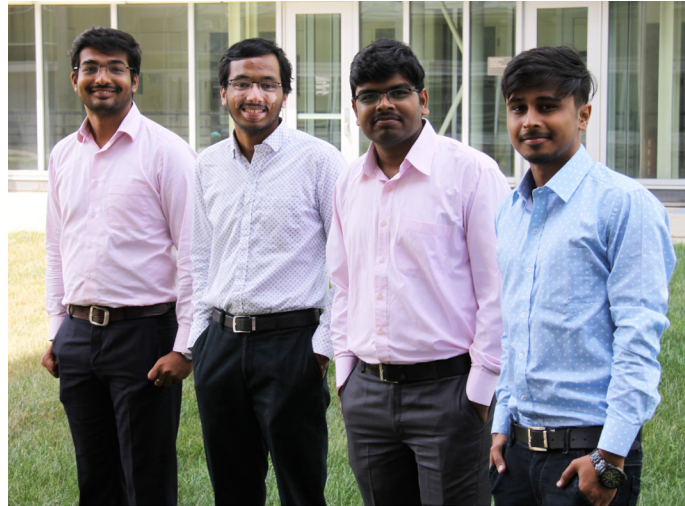
For the fifth consecutive year, the Research Internship for Young Academics (RIYA) program provided comprehensive research experiences for undergraduate mechanical engineering students from India. Four high-achieving students joined laboratories in The Ohio State University Department of Mechanical and Aerospace Engineering, where they took part in real-world investigations.

“This is a very unique program,” commented program founder and director, Professor Emeritus **Raj Singh**. “The students start with a passion for research, but without significant experience. We pair them with laboratories of interest where they quickly learn problem-solving skills in an active research environment.”

This year’s research projects focused on the subjects of nonlinear vibration, vehicle seat isolation, planetary gears and blood vessel permeability.

Abishek Verma, who joined the Gear and Power Transmission Laboratory, enjoyed “working in the lab and tackling real-life issues with machines.” He said, “It was a first-time experience for me to work on something experimental rather than theoretical.”

The Microsystems for Mechanobiology and Medicine lab was the home base for Shashwat Agarwal. “The RIYA program exposed me to many different experimental techniques,” he said. While investigating blood vessel permeability “I learnt cell culture, design of the experiments and micro fabrication.”



2019 RIYA Scholars

A TEAM EFFORT

Mentorship is a key component of the highly sought after program. Not only are students paired with mentors in their assigned laboratories, they also attend a weekly group session with Singh. Topics include ethics, research process, making presentations and planning for graduate school.

“The RIYA program has offered me an opportunity to improve and apply the fundamental concepts that I have learnt throughout my undergraduate curriculum,” said participant **Ajinka Pawar**. “It has also given me a chance to understand the importance of academics, research



Ahmet Selamet, left, encourages the four 2019 RIYA Scholars, center.

[and] entrepreneurship via group sessions with other RIYA scholars and professor Singh, and allowed me to grow professionally.”

The program’s success wouldn’t be possible without the commitment of faculty and research staff.

“Over the years the number of labs participating in the program has increased,” said Singh. “Faculty and researchers have seen the work ethic and analytical capabilities of the top-ranked interns from elite institutions and realize what a benefit they can be to their labs.”

RIYA scholar **Harshit Bansal** appreciated the support he received in the Acoustics and Dynamics Laboratory. “I liked the overall structure of the RIYA program that perfectly introduce[d] me to the basics of qualitative research [and] provide[d] me with the opportunity to interact with personalities varying from academics to the industrial background,” he said.

LESSONS LEARNED

The culmination of the 10-week program is an in-depth, technical conference-style presentation and question-and-answer session given by each student. This not only enhances their soft skills, but also provides opportunity for feedback from faculty and graduate students on their research approaches and findings.

Professor Ahmet Selamet, RIYA mentor and previous department chair, recognizes the program’s significance. “This visionary program truly excels in both the meticulous selection and the dedicated mentorship of its scholars,” he said. “The intense learning experience of its participants toward leading-edge research is simply unmatched.”

The entire experience can serve as a catalyst for continued research and discovery. Students often credit the program with influencing their career paths and an overarching objective of the program is preparation for graduate school.

“The RIYA experience is a step forward to pursue my graduate and post graduate studies later,” described Agarwal. “Having been given this wonderful opportunity to work on such a diverse set of skills has made me more confident than what I was previously... At a later stage, I intend to use my research and start my own venture in healthcare.”

by the Department of Mechanical and Aerospace Engineering

Defying the odds

Although engineering is a challenging curriculum, it's not the biggest obstacle soon-to-be mechanical engineering graduate **Taysa Markus** has faced. Markus is many things—a non-traditional student, a loving single mother and a fighter. Most of all, she's an inspiration.

Her story began in 1975 in war-torn Vietnam. As North Vietnam took over the country, Markus' family was pulled in different directions. Her father, a naval major in the South Vietnamese army, was put into a labor camp, where he remained for over 12 years. Her mother traveled a long distance to Saigon for work, staying in the city for a month at a time, before visiting home for just a few days. Meanwhile, her grandmother worked constantly to provide for the family.

Markus grew up with little resources for her education—no books, internet or libraries and very limited school supplies. By the time she was 19, the entire family had immigrated to the United States via the Humanitarian Resettlement Program.

Encouraged by her father, she decided to pursue a college education at Columbus State Community College. In 1997, she finished her associate's degree at Miami University and got married. With her limited educational start in Vietnam and her difficulties with English, she found herself

unable to complete a four-year degree at the time.

After Markus' family arrived in the United States, her father attended Columbus State and received an associate's degree in

electrical engineering. At the age of almost 60, he returned to school and earned a bachelor's degree from Ohio State. Again inspired by her father, Markus turned to Ohio State for her own education.

"I followed his footsteps to show my children that even if you are divorced or children of a single mom, it doesn't mean that you can't try to be your best," said Markus.

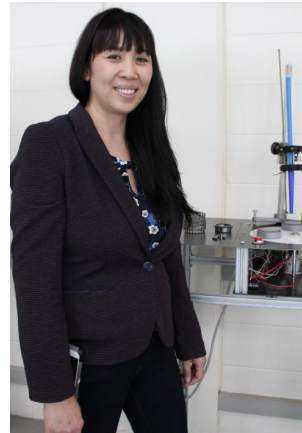
Pursuing an engineering degree as a nontraditional student proved to be no easy feat. Along with her studies, Markus worked hard to help her children succeed in school and maintain a loving household. Her days started at 2:00 a.m., when she did her classwork before getting her sons ready for the day. That was followed by attending classes, working part time, caring for her children and taking care of any other problems as they arose.

Markus feels well-prepared to be an engineer, thanks to Ohio State. She largely credits this success to her professors. They were willing to work with her and her busy schedule. Professors who taught with a positive, welcoming attitude and encouraged questions that opened her mind and increased her confidence in her abilities

"Everyone is different, but you have to find your own way," said Markus. **"Learn from the past and move forward."**

by the Department of Mechanical and Aerospace Engineering

READ MORE: go.osu.edu/uimarkus



Markus with her group capstone project



Markus, far right, with her parents and two brothers after immigrating to the U.S.

Putting the brakes on anxious driving



Brooke Delventhal tests the team's prototype at the Ohio State Driving Simulation Laboratory.

Driving a car can be one of the most stressful activities in our lives, with certain driving situations being nearly as stress-inducing as skydiving, according to a study by the Massachusetts Institute of Technology and Audi.

But what if a vehicle could detect when you're stressed and help you calm down? That's the premise behind a Honda-sponsored capstone project assigned to seven Ohio State students.

Last year, a team of students designed a prototype that detects when the driver of a car is anxious. Now a new batch of Buckeyes is taking the project to the next level.

"Our project is to try to mitigate the anxiety or stress that is detected in the driver," said biomedical engineering major **George Gerges**. **"We want to do that in a passive, seamless, friendly way."**

His teammates include engineering majors **Dylan Beam** (food, agricultural and biological engineering), **Amber Bollinger** (food, agricultural and biological engineering, and neuroscience), **Brooke Delventhal** (mechanical engineering), **Jerry Ding** (computer science and

engineering) and **Robert Murcko** (food, agricultural and biological engineering), as well as Fisher College of Business student Brett Miller (information systems).

The team spent fall semester researching proven techniques to reduce stress across a variety of fields, from psychology to sports. They identified optimal ways to target three senses—smell, sight and sound—to lower stress without impacting safety.

"We want to make sure the things we implement won't impede the driver's focus on the road, because ultimately that is the highest priority," explained Brooke Delventhal.

Once the system detects that the driver is stressed, it will automatically begin playing soothing music, diffuse a comforting scent and turn on a blue light—all of which studies have shown to diminish stress. When the driver's anxiety is reduced, the system will turn off.

During spring semester the team assembled and optimized their prototype. Soon they will test it on volunteer drivers at Ohio State's Driving Simulation Laboratory on West Campus.

The project is one of 200-plus innovations that will be on display during the 12th annual Engineering Capstone Design Showcase on April 23 in the Ohio Union.

As part of the college's focus on experiential learning, all undergraduate engineering students must complete a one- or two-semester-long capstone design project prior to graduation. The Occupant Wellbeing Team members are among the more than 80 students—including engineering, business, industrial design and humanities majors—who chose to participate in the Multidisciplinary Capstone Design Program this year, rather than a department-specific capstone project.

by Candia Clevenger, College of Engineering

READ MORE: go.osu.edu/uibrakes

STANDOUT STAFF | KEVIN WOLF



Kevin Wolf

*3D Printing Laboratory Supervisor/Research Machinist/
Student Shop Supervisor*

What is your field specifically and what made you pursue it?

"I started at Sinclair Community College in Dayton. The program was called Projects Step II. It was an intense one-year long program to become a toolmaker. Growing up in the Dayton area where manufacturing was prevalent, many of my friend's parents worked at some of the larger companies and the ones who made a very good living were always in skill trades. It seemed like a good path for me. While I was in the program, I got a job with a company offering a state-approved apprenticeship. After 4 and a half years, I graduated that and earned my journeyman certification as a mold maker. Making plastic-injection and rubber-injection molds mostly. I enjoyed the prototyping more than anything. Designing and building something is very rewarding. I continued to take courses related to the industry and after about 8 years, I attended the Top Gun Tooling and Machining Academy."

What brought you into education then from that?

"I eventually ended up in an administration role for about 6 years but I wanted to get my hands dirty again. I missed it. This position opened up and even though the salary was quite a bit lower than industry, I felt the work was important and would be rewarding. To me, it just seemed like a really good fit. I didn't realize at the time how rewarding it was going to be for me. Since the time that I was hired, the type of projects we work on has grown to a huge variety. We get to teach students and help them prepare for industry. A lot of the young engineers that I worked with while in industry didn't have the practical experience and those are skills we can give them that would otherwise take years of experience to gain depending on the type of position they accept when they graduate."

What is your specific role and what is the impact of it?

"Experiential learning is the term that the university uses for us. Being young engineers, they are tasked in their courses to come up with certain projects and ideas. Be it capstone or some of the student-led groups out at CAR or BSLI, for example. The use of SolidWorks is there but the understanding of how to design something for manufacturing really isn't. A lot of what I spend my time doing is working with these students on their designs and often end up making the more difficult parts for them. Starting with the requirements of the design, budgeting, limitations of the equipment available to them all the way to completion. I believe the impact we have on students is extremely important for their success."

What would you tell a prospective student coming into mechanical or aerospace engineering?

"It is going to be a lot of hard work, time and effort. But at the end of the day if you put the work in now you're not going to regret it. Work hard now, play hard later kind of thing."

What do you like most about your job?

"The interaction with the students and researchers. There is something really great about designing something and making that design a reality. I get to be part of that. I get to work with researchers from many different departments and the variety of work never gets old to me."

What advice would you give to a student who was about to leave school and start in the industry?

"I think the advice I would give to a young person just graduating college would be to definitely be open minded and respect those who have been in the industry because they are going to learn a lot from them. When you get out there, understand that you might not be doing exactly what you dreamed about doing. You have to put in your time to get there. Just be patient and learn everything you can along the way. Don't live to work. Work to live. Find a balance between work and your personal life you find fulfilling"

What is the coolest or most interesting thing you have made in the shop?

"To me, it is a two-way tie. But there have been so many. These two are just what come to mind at the moment. Working with Andrej (3D printing tissue inside the body during minimally-invasive surgery) on his project was probably one of the coolest ones because what we actually had to make was so complex. It was challenging and when it was done, very rewarding. As far as one of the projects that I just love is, Megan Heitkemper's in biomedical engineering. I have been working with her for a few years. One of her projects is fetal heart valve research. The end goal is to be able to repair birth defects prior to birth. This would prevent so many children from having open heart surgeries before they can even walk. Things like that are big for me. But again, I get to work on so many amazing things, they are all rewarding in one way or another"

MAE Students have the opportunity to gain hands-on experience in the Webster machine shop





“I would encourage everyone to explore various opportunities to gain new experiences and to believe in your hard work and commitment. There are many resources and programs that will help you discover your passion in local, national and international communities,”

Mia Zhang

Undergraduate Mia Zhang wins Goldwater Scholarship

Ohio State electrical and computer engineering student **Mia Zhang** was awarded the 2019 Goldwater Scholarship. The Goldwater Scholarship is one of the most prestigious national awards for STEM students.

Mechanical and aerospace engineering professor **Jonathan Song** is serving as Zhang’s advisor.

“Our ongoing collaborative work has established that non-contact electric field treatment alters the motility of metastatic cancer cells,” said Song. “Mia is leading one of our efforts in trying to gain a deeper understanding of the underlying biological effects.”

The work Zhang is doing is part of the undergraduate honors research program offered through the department of mechanical and aerospace engineering. Undergraduate honors research is one of the opportunities that students can pursue to complement their coursework and differentiate themselves as they build up a range of technical experiences to prepare for a future profession.

Zhang was one of four students from Ohio State to receive an award from the Barry M. Goldwater Scholarship and Excellence in Education Program.

Zhang is a senior at Ohio State and is hoping to go on to receive her masters and PhD in biomedical engineering. She was also awarded a fellowship through the Pelotonia Undergraduate Fellowship Program for undergraduate students who want to help cure cancer.

Zhang’s research advisor Jonathan Song shared the following about her achievement.

“Mia is truly an exceptional student in terms of her intelligence and drive for excellence. I am delighted that the Goldwater Foundation recognizes the same qualities in Mia and awarded her this most illustrious scholarship,” Song said. “Her future could not be brighter.”

READ MORE: go.osu.edu/uizhang

TO LEARN MORE ABOUT UNDERGRADUATE HONORS RESEARCH VISIT: go.osu.edu/uiresearch

Buckeye Engineers ready to engage community as Sesquicentennial Scholars

To honor The Ohio State University’s historic 150-year milestone, the Sesquicentennial Student Scholar Leadership Program has been established to develop current students into future leaders. Five exceptional students from the Department of Mechanical and Aerospace Engineering are among the 150 from across the university system who have been selected to participate in this distinguished program.



Top Row (Left to Right): Vijay Sankar, Terra Forsythe.
Bottom Row (Left to Right): Rebekah Koehn, Richie Wainio, Maxwell Weber

Vijay Sankar, Terra Forsythe, Rebekah Koehn, Richie Wainio and Maxwell Weber will build the skills and fortitude essential to becoming engaged citizens through leadership development and ambassador opportunities. Scholars receive \$2,500 for the first year of the program, and the scholarships are renewable for up to six additional semesters or completion of their current degree program, whichever comes first.

“Being a Sesquicentennial Scholar to me means being able to represent all the aspects of The Ohio State University that have made it such a great place of learning for 150 years,” commented Maxwell Weber, an undergraduate mechanical engineering student.

“I am very grateful to be able to represent Ohio State and serve as an ambassador for this great school,” commented undergraduate mechanical engineering student Richie Wainio.

Graduate Fellow Rebekah Koehn is grateful for the opportunity to give back to a community that she has benefited from so much.

“The support I received even as a prospective student showed me that there was something different

about this place: Buckeyes support each

other,” she said. “I knew that I wanted to be a part of a community like that, and I am so excited and honored to be able to support and celebrate this community through the Sesquicentennial Scholars program.”

While the program supports near-term objectives, it also fosters a lifelong commitment to leadership and service.

These Buckeye Engineers join a diverse group of students ready to enhance the university’s communities. They come from five continents, nine countries, 22 states in the U.S. and 42 counties across Ohio and represent every campus and college in the university.

by the Department of Mechanical and Aerospace Engineering

READ MORE: go.osu.edu/ui150

Shooting for the stars

Growing up, biomedical engineering major **Ada Kanapskyte** '21 dreamed of working in spaceflight. Her experience as a Buckeye Space Launch Initiative (BSLI) team member over the past three years is enabling that dream to achieve liftoff.

“My ability to go into this industry was paved by all the work that I did in BSLI and all the people that I met,” said Kanapskyte, the team’s outreach chair.

The interdisciplinary student organization designs, builds and launches high-powered rockets miles above the earth’s surface. Its approximately 70 active members span nearly every engineering major, though the majority are mechanical and aerospace engineers.

The team’s success wouldn’t be possible without the support of generous donors who have given more than \$57,000 over the past three fiscal years. That includes \$35,000 from Mechanical and Aerospace Engineering Chair **Vish Subramaniam**’s discretionary funds that are available thanks to the generous support of alumnus **Monte Ahuja** '70.

The team’s sponsors are Made In Space, Arconic, Huntington, Gateworks Corporation, Ohio Space Grant Consortium, Advanced Circuits, RadioBro Corporation, and Ohio State’s College of Engineering, Department of Mechanical and Aerospace Engineering, and Battelle Center for Science, Engineering, and Public Policy.

“We could not do what we do without the generosity of donors and alumni who contribute both financially and with their time,” said BSLI President **Harrison Kearby** '20. “The Spaceport America Cup is very expensive, let alone the cost to build a rocket. Every dollar donors give to our program goes right back into our organization.”

Former BSLI program manager **Nicolas Flesher** '18, a project engineer at Dynetics, also remains involved as a volunteer after seeing the impact mentors can have.

“I am a big proponent of hands-on experience,” Flesher said. “What Ohio State offers sets its programs apart and is so important to the development of industry-relevant skills.”

by Candi Clevenger, College of Engineering

READ MORE: go.osu.edu/uilaunch



Students prepare to compete at the 2019 Spaceport America Cup in New Mexico.

THREE BUCKEYES WIN AWARDS AT THE 2019 INNOVATIONS IN NUCLEAR TECHNOLOGY R&D AWARDS

Kelly McCary, a Ph.D. student in Nuclear Engineering, has been awarded a First Place prize in the Open Competition in the category of Advanced Fuels. Her award-winning research paper, “Response of Distributed Fiber Optic Temperature Sensors to High-Temperature Step Transients,” was published in IEEE Sensors Journal in November 2018.



Left to Right: Kelly McCary, Keoni Sanny, Neil Taylor

Keoni Sanny, an Undergraduate student in Civil Engineering and Nuclear Engineering, has been awarded a Second Place prize in the Open Competition in the category of Energy Policy. His award-winning research paper, “Dynamic Probabilistic Risk Assessment with PyCATSHOO: The Case of the Emergency Power Supply of a Nuclear Power Plant,” was presented at the International Topical Meeting on Probabilistic Safety Assessment and Analysis in May 2019.

Neil Taylor, a Ph.D. student in Nuclear Engineering, has been awarded a Second Place prize in the Open Competition in the category of Material Protection, Control, and Accountancy. His award-winning research paper, “Isotopic Concentration of Uranium from Alpha Spectrum of Electrodeposited Source on 4H-SiC Detector at 500° C,” was published in the Journal of Radioanalytical and Nuclear Chemistry in May 2019.

In order to be successful and retain its leadership role in nuclear technologies, the United States must foster creativity and breakthrough achievements to develop tomorrow’s nuclear technologies. The Department of Energy has long recognized that

university students are an important source of breakthrough solutions and a key component in meeting its long-term goals. The Innovations in Nuclear Technology R&D Awards program was developed for this purpose.

The Innovations in Nuclear Technology R&D Awards program is designed to: 1) award graduate and undergraduate students for innovative nuclear-technology-relevant research publications, 2) demonstrate the Department of Energy’s commitment to higher education in nuclear-technology-relevant disciplines, and 3) support communications among university students and Department of Energy representatives.

The program awarded 25 prizes in 2019 for student publications relevant to innovative nuclear technology. In addition to cash awards, award-winning students will have a variety of other opportunities.

For more information on the Innovations in Nuclear Technology R&D Awards program, visit nucleartechinnovations.org

Buckeye EcoCar team with the 2019 Chevy Blazer



UNDERGRADUATE HONORS, AWARDS AND RECOGNITION

STUDENTS

- Outstanding students were among those honored at the department’s annual Honors and Awards Ceremony in April – go.osu.edu/ui2019awards
- Charles El-helou earns third place at Denman Research Forum – go.osu.edu/uielhelou
- Three department students awarded top honors at AIAA student conference – go.osu.edu/uiuiaa

STUDENT PROJECT TEAMS

- The Ohio State EcoCAR team earned first place in the EcoCAR Mobility Challenge Year One Competition – go.osu.edu/uimobility
- Ohio State’s Engineers Without Borders chapter works to improve agriculture in Gambia – go.osu.edu/uiewb
- Underwater Robotics was awarded the Judge’s Award for Data Sharing at RoboSub 2019 – go.osu.edu/uirobosub
- Six student organizations honored for their community impact – go.osu.edu/uistudentorgs
- Motorsports student project teams gear up for upcoming competitions – go.osu.edu/uistudentteams

STANDOUT ALUMNUS | SARAH KELLEY

Engineering excitement

Before even arriving at Ohio State in 2001, **Sarah Kelley** knew she wanted to work in the themed-entertainment industry.

Nine years after graduating with her master’s in 2007, she made her dreams a reality and began working at the Universal Orlando Resort. Originally, she was part of the technical services engineering team to help keep rides running to standard.

“We would be brought in to assess any issues that they came across that they haven’t seen before or to answer questions,” Kelley said. “Things become obsolete when they are running 24/7, 365 days a year. They need love and attention all the time.”

Now in her new role at Universal Creative, she is helping to bring the ideas of artists, designers and writers to life in theme parks.

“I am part of the concept development team that comes up with the new ideas for five to 10 years into the future and what the future of theme parks is going to be,” Kelley said. “So, our role is to kind of help bring their ideas into a technical reality and figure out how to make their crazy idea actually work.”

Kelley attributes a lot of hard work and some luck in landing where she is today. Before she started at Universal, Kelley worked in flight simulation for almost ten years where she got to grow in the industry.



Sarah Kelley

Ohio State also played a large role she said. Her professors, classes in industrial engineering along with her mechanical minor, and work she did in the machine shop played a large role.

by Jake Rahe, Department of Mechanical and Aerospace Engineering



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Student instructors in the Machine Shop are key to integrating functional projects and experiences in the undergraduate curriculum