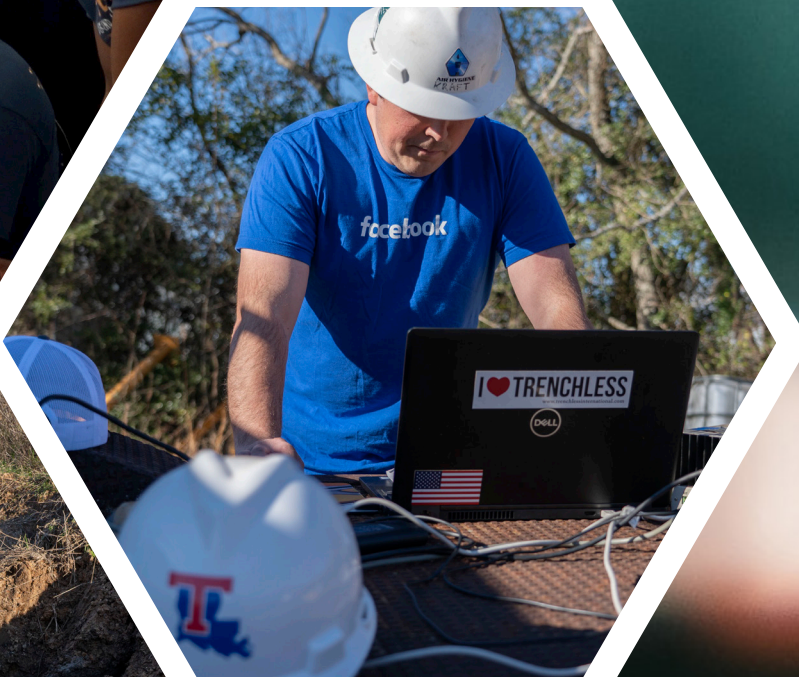
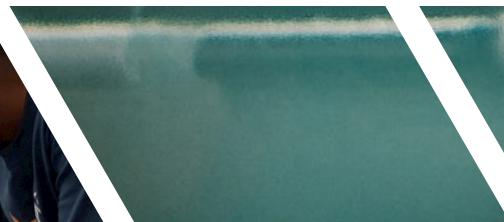
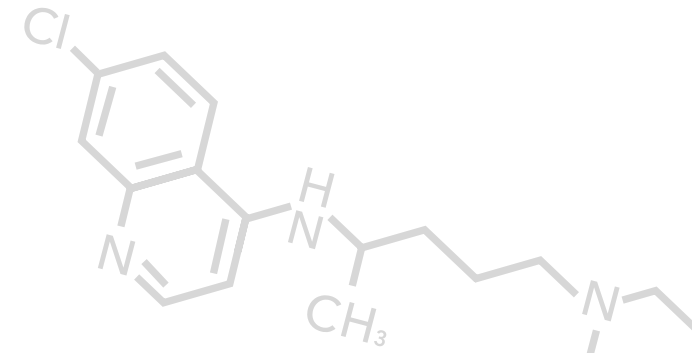




SPRING 2020

# COLLEGE REPORT

COLLEGE OF ENGINEERING & SCIENCE LOUISIANA TECH UNIVERSITY



INSPIRING INNOVATION



# FROM THE DEAN

## INSPIRING INNOVATION

Spring Quarter presented unexpected challenges for Louisiana Tech and the College of Engineering and Science. Efforts by the State of Louisiana to mitigate the spread of the coronavirus changed the way professors offered classes and students learned, as all classes within our College, including labs, were moved online in an extremely short time.

Many of our traditional events were canceled or postponed, and students, faculty and staff missed opportunities to gather as we shifted to an online community. We have met these setbacks with the flexibility and innovation that define engineering and science at Louisiana Tech.

As you read our 2020 Spring College Report, you'll see examples of faculty and students who inspire innovation through their hard work and unique perspectives. We highlight two professors who are leading their fields in world-changing research.

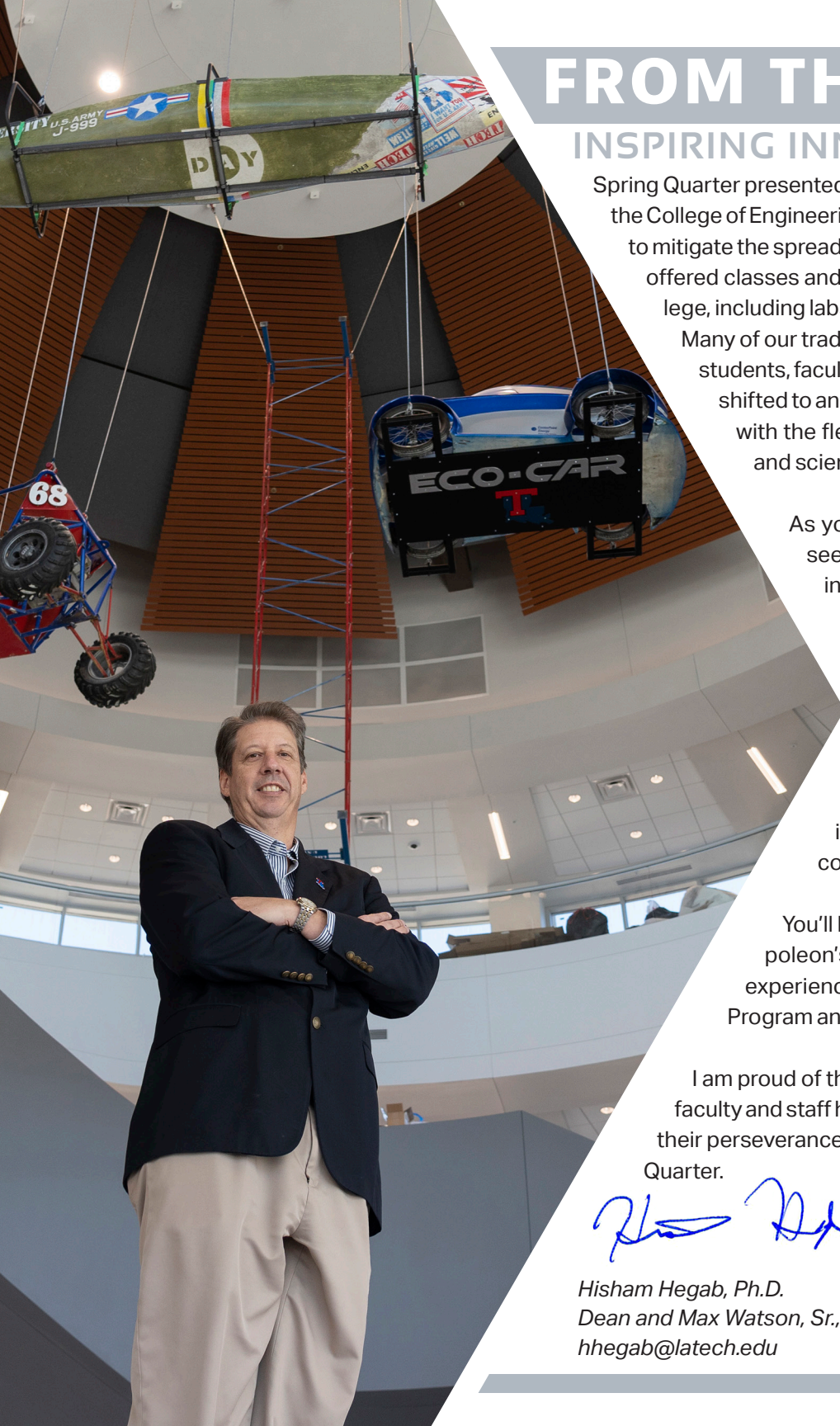
Dr. Amin Amir and a team of interdisciplinary students and faculty are designing a new method for Facebook to lay fiber optic cable.

Dr. Kasra Momeni is leading multiple grants that will have applications in a variety of fields, including in-space manufacturing and quantum computing.

You'll learn about senior chemistry student Sierra Napoleon's experiences in research and about the unique experiences provided by our Grand Challenge Scholars Program and our annual Cyber Storm hackfest.

I am proud of the work that Engineering and Science students, faculty and staff have done for the 2019-2020 academic year and their perseverance during the Spring Quarter.

Hisham Hegab, Ph.D.  
Dean and Max Watson, Sr., Professor  
[hhegab@latech.edu](mailto:hhegab@latech.edu)





# DR. AMIN AZIMI:

## LAYING THE GROUNDWORK FOR WORLDWIDE ACCESS TO THE INTERNET

Thanks to a high-profile grant from Facebook, Louisiana Tech University and Dr. M. Amin Azimi, a research scientist with the Trenchless Technology Center and adjunct professor with the civil engineering program, are at the forefront of a project to lay new fiber optic cable around the world.

Facebook is one of the largest organizations in the fiber optics connectivity field in the world. In recent years, Facebook, Google, and Microsoft have all invested in underground, aerial and submarine cables to keep pace with increasing demand for access to the internet. These companies aim to provide internet cable to urban, rural and underdeveloped areas in the United States and throughout the world. Underground, aerial, and submarine cables carry almost all of the transoceanic data around the globe because they are cheaper and faster than other methods of delivery like satellites. As a result, Facebook reached out to select partners to develop more economical, more efficient means of laying cable under the ground and in other difficult situations.

As one of these partners, the Louisiana Tech team began developing its solutions last fall. The team of more than 20 student and faculty experts in civil engineering, construction engineering technology, computer science, engineering management and mechanical engineering and high-ranking employees

from Facebook is designing an autonomous “trenchless” underground fiber-laying robotic system to help reduce the costs and complexity of conventional fiber-installation techniques.

How did Dr. Azimi land the “FERRET--FibER installation via Robotic Excavation and Trenching” grant? The first step was leading the winning team in an international inventors’ competition against some of the best technological minds in the world. After earning the 2018 gold medal, the “Best American Inventor” award and the “Special Prize” at the Silicon Valley International Inventions Festival in Santa Clara, California, Dr. Azimi and the Trenchless Technology Center (TTC) landed on Facebook’s radar. Shortly afterward, he received an email directly from the company’s Director of Engineering – an email that he attributes to the TTC’s reputation around the globe.

“The Trenchless Technology Center is the oldest, biggest center for trenchless research in the world,” he says of Facebook’s decision to offer Louisiana Tech a grant, “and Facebook was interested in our research because of the level of innovation and expertise the Center facilitates. They asked us to participate in this project because they are aware of what Louisiana Tech and the TTC have to offer in terms of innovation and expertise.”









For the first year of the grant, subteams have focused on three phases: geotechnical studies, conceptual design (body and cutting features design), and FE (finite element) simulation and have completed the first phase of the project, conceptual design of the robot, which resulted in 16 models for robot bodies. The team built multiple sized drills to test the system and performed finite element simulations and repeated tests for different soils, including mixed agricultural soil.

For the second phase, the team will begin building the robots that they have designed. Dr. Azimi has recruited three students from Louisiana Tech's School of Design to create animated ads that will increase visibility by explaining the engineering and showing the technical aspects of the project. As the interdisciplinary team adjusts the software that they developed for robotics, the multidisciplinary research will include animators to help with the animation.

"I want to express my appreciation to every individual in my team; they have done amazing teamwork. I am impressed and proud of them. Special thanks to Dr. Matthews and Dr. Crittenden for their support. This is a unique research that its outcomes can be use in wide range of applications around the world and bring a lot of benefit to communities. By 2022, many (around three billion) users will experience a poorer internet network performance in compare with today. Surely, this research can im-

prove the future of connectivity. I plan to continue this research to make this technology (robot) available and I always welcome intelligent people to join the team."

Dr. Kelly Crittenden, program chair and associate professor for mechanical engineering at Louisiana Tech and faculty advisor for the mechanical engineering team working on the FERRET project, notes that the students have met the high-level of responsibility necessary for the project because of their experience with hands-on academic projects at Louisiana Tech.

"The students have done an excellent job of being contributors to the team and not just 'students.' I believe everyone on the team respects and encourages their thoughts on the design of the robot. The students have used their Solidworks design and simulation skills to great effect on the project. They have also used their 3D printing experience to print test pieces and physical models of their designs to speed up the design and iteration process."

On top of getting the experience of working under tight time constraints on a project with real-world implications, students have weekly opportunities to connect with Facebook personnel through video conferences. Each group presents research, findings, and solutions to Facebook's Los Angeles and Palo Alto (Menlo Park) campuses. During the conferences, they examine which designs have worked best in the most recent experiments and discuss the results of shape analyses optimization that show which designs need less torque and

force, meaning they need less energy to move underground. Using this information, the teams determine how to adjust angles and diameter to create the final product.

Senior mechanical engineering student Luke Hansen says that the project has helped sharpen his ability to apply ideas to a large project with measurable outcomes.

"Working on this project gave me a chance to take engineering concepts I learned in class and apply them to the real world of design. I am so thankful for a school like Tech, where I make professional connections and make the most of every opportunity."

• • • •

*"The students have learned what it is like to work with a local team as well as a remote team. They have attended and contributed to regular remote meetings through online conferencing systems. I believe the students have gained very valuable real-world experiences surrounding the development of a physical system."*

- Dr. Kelly Crittenden

#### LOUISIANA TECH TEAM MEMBERS

**Dr. M. Amin Azimi**, Research Assistant  
Professor with the Civil Engineering program,  
Research Scientist with the Trenchless  
Technology Center

**Dr. Kelly Crittenden**,  
Mechanical Engineering Program Chair

**Dr. John Matthews**,  
Trenchless Technology Center (TTC) Director

**Mr. Chris Morgan**,  
TTC Lab Manager

**Asal Bagherpour**  
(Graduate student, Engineering Management)

**Urso Campos**  
(Former TTC Ph.D. student, Civil Engineering)

**Hongfang Lu**  
(TTC Ph.D. student, Civil Engineering)

**John Kraft**  
TTC Ph.D. student Construction Engineering)

**Andrew Vidrine**  
(Mechanical Engineering student)

**Brett Bergeron**  
(Mechanical Engineering student)

**Brice Soignier**  
(Mechanical Engineering student)

**Sahil Desai**  
(Mechanical Engineering student)

**Luke Hansen**  
(Mechanical Engineering student)

**Brett Gates**  
(Mechanical Engineering student)

**Caleb Swafford**  
(Mechanical Engineering student)

**XiaoWang**  
(TTC visiting student)

**Feifei Cheng**  
(Computer student)

**John McAdam**  
(Animation team)

**Carrington Merrell**  
(Animation team)

**Pankita Patel**  
(Animation team)

**Matthew Braud**  
(TTC Graduate student)

**Devin Rowland**  
(TTC student)

**Richard Edwards**  
(TTC student)

**Edward Gray**  
(TTC student)

**John Romig**  
(TTC student)



# SIERRA NAPOLEON

## COMMITMENT, COMMUNITY, AND CHEMISTRY

Senior Sierra Napoleon joined Louisiana Tech with a love of chemistry and a determination for success. Nearly four years later, she has received one of only two 2020 Tenets of Tech awards, and next fall, she'll take the skills that she's developed at the University to a doctoral program in biochemistry at Washington University in St. Louis, where she'll study drug development and delivery.

Sierra gained an affinity for chemistry in high school when her teacher Mrs. Freeman showed the class how often chemistry affects day-to-day life. At Louisiana Tech, Sierra discovered research and learned that results from her work could help the community. The drive to help others has pushed her to develop a level of expertise that has resulted in scholarships, grants, conference presentations and published papers.

Last summer, Sierra's hard work led to an internship at the University of Washington in Seattle. The university selected her to the Pharmacological Sciences Summer Diversity Program. While there, she helped develop an analytical method to measure marijuana metabolites in the plasma of HIV infected patients and assisted in analyzing opioid disposition to fetuses using HPLC-MS (high-performance liquid chromatography-mass spectrometry) and 96-well biochemical assays.

At Louisiana Tech, Sierra researched drug delivery, homeopathic solutions, and gynecological problems with Dr. Marsha Cole, lecturer

*Sierra receiving the Tenets of Tech Award from Louisiana Tech President, Les Guice*



of chemistry. She's also a member of Tech's Kappa Chi chapter of Delta Sigma Theta Sorority, Inc., Sigma Alpha Iota, the Black Student Union, the Alpha Epsilon Delta Pre-Health Professional Honors Society, the American Chemical Society, the National Society of Black Engineers and numerous professional pharmacological and chemistry organizations.

"Sierra is a stellar student and researcher," Dr. Cole says of her protege. "I have watched her transform into a scientist that has complete ownership of her project. She has become unmatched in potential, commitment and vision. She reflects academic integrity, is a persevering champion and is inspirational to others that represent the underserved student population in the sciences. Most importantly, she does this all with gratitude and grace."

"What I'll miss most about COES and Tech is the strong sense of community I've felt through both units, Sierra said. Having such a close-knit relationship with professors, other chemistry and COES students, and even students I met in other social organizations is something I'll never take for granted. I believe my success as an undergrad is attributed to experiencing this family dynamic within every dynamic at Tech. I'll also miss studying at the IESB (Inte-

grated Engineering and Science Building). I love how every single chair in the building is comfortable!"

The commitment to success and flexibility that Sierra exhibited throughout her academic career at Tech was especially helpful to her when the University moved classes online due to the COVID-19 outbreak. Thanks to her dedication, Sierra had completed most of the research for her senior project and was preparing to move to more in-depth work for other projects when in-person classes and labs were suspended.

• • • •

*"It has been a tremendous privilege to mentor Sierra this year, and I am eager to know what else the future has for her as she embarks to graduate school this fall and transforms homeopathic medicine for women across the many milestones affecting our health,"*

*- Dr. Marsha Cole*

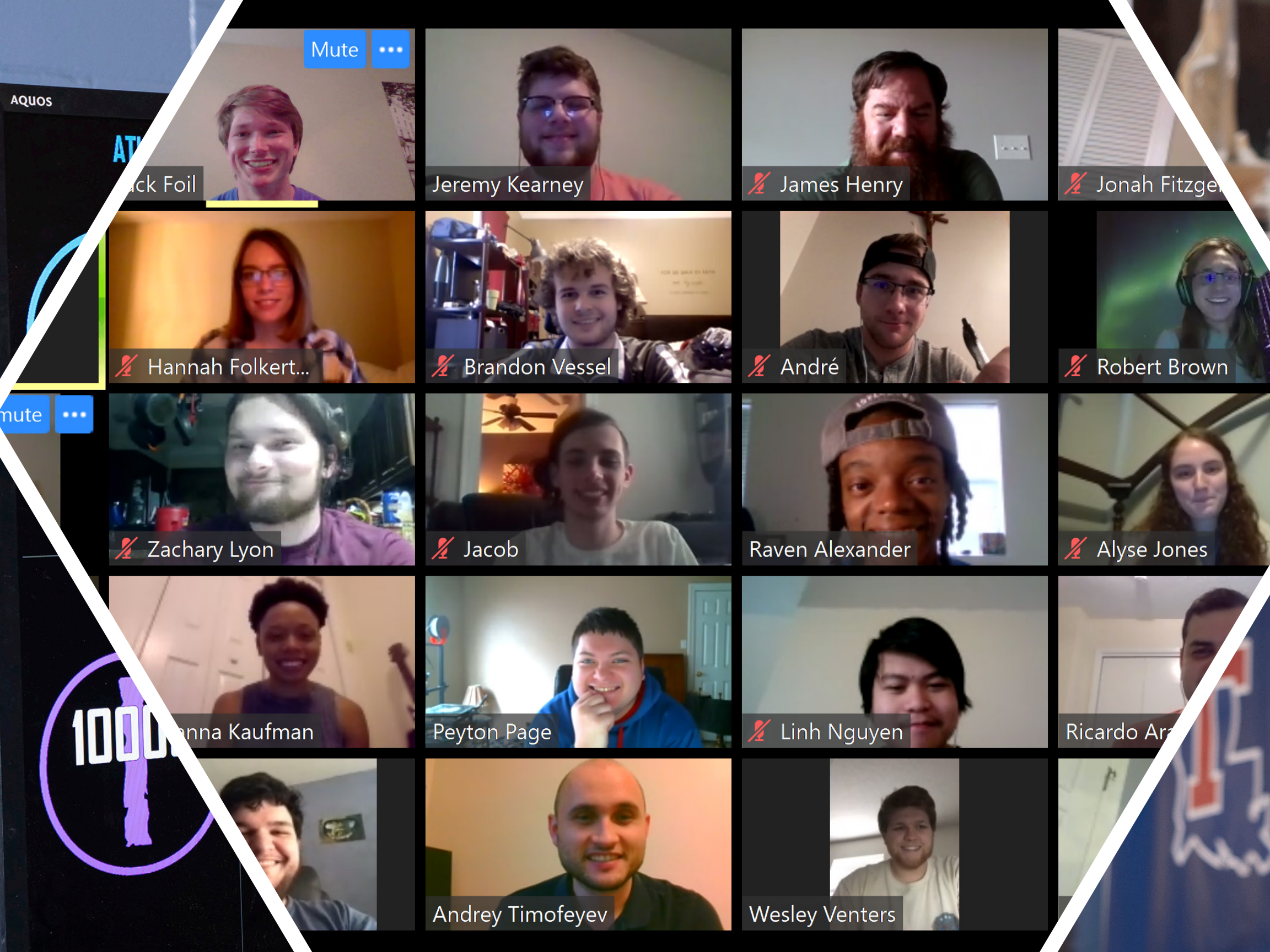
"As a member of Dr. Cole's research group, I now have in-depth knowledge of pharmaceutical drugs as well as alternative medicines, homeopathic practices, and potential drug-drug and drug-herb interactions. I had a lot of experiments planned for the spring to make my research as in-depth

as possible. I am fortunate to have had a natural stopping point in my research, and since I was unable to be in the lab, I was able to focus all of my time on preparing my capstone research paper and presentation.

Sierra presented her senior project on Friday, May 8, through Zoom. She also made a virtual presentation for the Experimental Biology Conference this spring.









Mute





Black Foil


Jeremy Kearney


 James Henry

 Jonah Fitzgerald

 Hannah Folkert...


 Brandon Vessel


 André

 Robert Brown


mute



 Zachary Lyon

 Jacob

Raven Alexander

 Alyse Jones

1000

Anna Kaufman

Peyton Page

 Linh Nguyen

Ricardo Ar

Andrey Timofeyev

Wesley Venters



# CYBER STORM

## ADAPTING THROUGH CHALLENGES

Anyone familiar with Louisiana Tech's Cyber Storm will recognize its three-word motto: "Attack. Defend. Adapt." After a decade of challenging students through network defense and hacking activities, the "adapt" portion of the event motto was more accurate than ever. The Computer Science and Cyber Engineering professors who served as administrators for the 2020 event had to solve a challenge of their own: how to host the two programs' largest event of the year remotely.

Dr. Jean Gourd, associate professor of computer science and founder of Cyber Storm, developed the event in 2010 to give Louisiana Tech students the skills and confidence to tackle unexpected cyber security problems. Since then, it has become a rite of passage for Computer Science and Cyber Engineering students at the University. The students spend the spring quarter devising plans to hack into their classmates' and professors' networks while defending their own.

The day-long hackathon is a defining event in the academic careers of its participants. They prepare for it for years, taking courses to learn more about network security before enrolling in the Cyber Security and Computer Networks Security classes that end with Cyber Storm as their finals.

When Spring Quarter 2020 was thrown into coronavirus chaos, Dr. Gourd, Dr. Andrey Timofeyev, lecturer of computer science, and Dr. Ankunda Kiremire, lecturer of computer science, redesigned the courses to use remote collaboration tools, such as Zoom video chats, Discord channels and Google Drive shared spaces.

"Cyber Storm is a team event with collaboration and communication being the main pillars," Dr. Timofeyev said. "No one can conquer all the challenges throughout the event, so it is crucial for the team to be able to work together."

*"The most challenging aspect of organizing Cyber Storm this year was determining how to allow students to collaborate in a safe and efficient manner."*

- Dr. Andrey Timofeyev

With the need for close collaboration during a time when social distancing was a necessity, both the professors guiding the courses and planning the event and the students enrolled leaned on their own adaptability. Cyber Storm 2020 took on a new look, one without network attacks and servers. For this event, the administrators transmitted challenges from a command station in the Integrated Engineering and

Science Building to teams that competed in other spaces.

"Challenges were deployed through our typical situational awareness infrastructure," Dr. Gourd said. "All of it is web-based, so it is accessible from anywhere."

As professors reevaluated their methods for teaching the courses and hosting the event, participants were tested in ways that those from previous years hadn't been. The students, as expected, met the new challenges with a determination to succeed.

Cyber Engineering junior and member of team Hydra Jack Foil, says that he and his team were prepared thanks to previous Computer Science classes that they'd taken. In those classes, they had learned to adapt to unforeseen problems. They focused on the challenge they were solving rather than the obstacles they faced.

"Our team prepared by assigning people positions, exchanging code, and getting to know each other through each challenge."

Despite the complications of tele-team building, Cyber Storm 2020 was a success, and the unique experience will follow students as they prepare to join the workforce.

*"COVID-19 threw us for a loop. But in the end, the event was a great success. In fact, we learned a lot about restructuring the course and Cyber Storm for remote delivery, participation and group-based activities. Some of the innovations that we made actually make the course and Cyber Storm better. We can likely use most of them in on-campus versions of the course and Cyber Storm in the future."*

- Dr. Jean Gourd

### 2020 CYBER STORM TEAMS AND SCORES

Minataur .....	1,012,345
Sphinx .....	920,000
Wyvern .....	912,500
Werewolf .....	800,000
Siren .....	785,000
Chimera .....	692,500
Phoenix .....	652,777
Hydra .....	640,000
Kraken .....	625,000
Unicorn .....	575,000
Griffin .....	555,000
Jabberwock .....	375,000



# DR. KASRA MOMENI

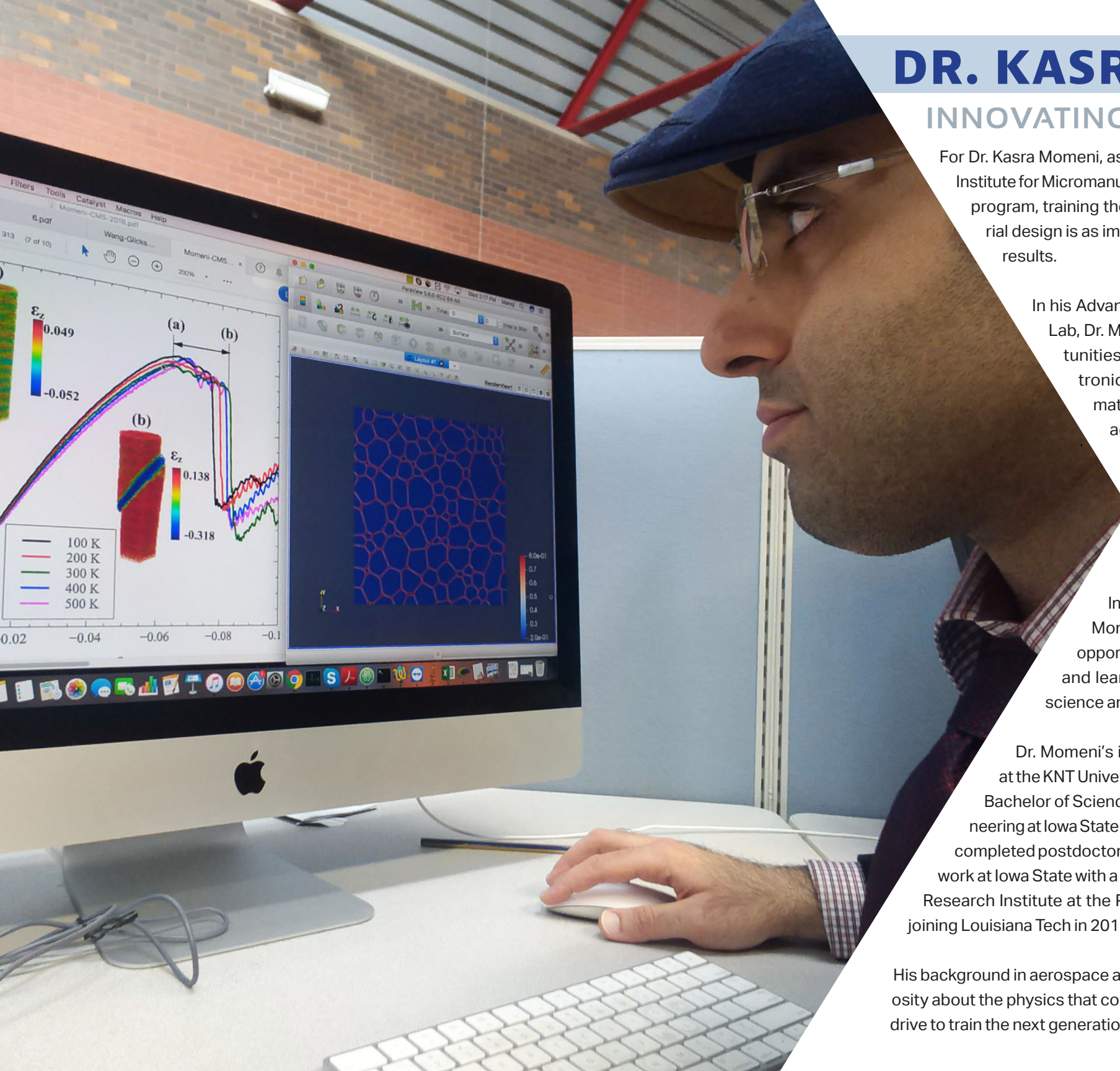
## INNOVATING OPPORTUNITY

For Dr. Kasra Momeni, assistant professor of Louisiana Tech's Institute for Micromanufacturing and mechanical engineering program, training the next generation of experts in material design is as important as earning grants and getting results.

In his Advanced Hierarchical Materials by Design Lab, Dr. Momeni provides students with opportunities to develop improvements for electronics and quantum computing, design materials for next-generation nuclear reactors, and develop a new generation of alloys for in-space manufacturing. Funded by grants provided through the National Science Foundation, National Aeronautics and Space Administration, U.S. Department of Energy, American Society for Metals International, and other organizations, Dr. Momeni provides students in his lab with opportunities to use cutting-edge equipment and learn the latest techniques in materials science and mechanical engineering.

Dr. Momeni's interest in designing materials began at the KNT University of Technology, where he earned a Bachelor of Science and expanded into aerospace engineering at Iowa State University, where he earned a Ph.D. and completed postdoctoral research in the field. He followed his work at Iowa State with a postdoctoral position at the Materials Research Institute at the Pennsylvania State University before joining Louisiana Tech in 2016.

His background in aerospace and materials research guides his curiosity about the physics that control the behavior of materials and his drive to train the next generation of experts to create advanced





materials. He and his team use a variety of modeling and experimental techniques to build tools and techniques to address the challenges in nanoscience and nanotechnology.

The computational capabilities of his lab allow Dr. Momeni and his students to develop new approaches to difficult to answer questions in nanotechnology. Students in his lab develop multiscale models, and material design procedures to make advanced materials.

Rachit Pokhrel, a doctoral student working on his computational analysis modeling degree with the lab, says that working with Dr. Momeni has helped him grasp the fundamentals of research methodology and enhance his skills in high-efficiency software, like MOOSE, a cutting-edge multiphysics simulation tool.

"Dr. Momeni is thorough at explaining the research problem that we are trying to solve and is very specific on the methodology we should use for each project. He's frequently in contact with us in a lab Slack group and in weekly meetings so that we can share updates and ask questions. He is very adamant that we speak about our progress and the background of our work so that we will be prepared for our theses and dissertation defenses."

Students who aren't interested in joining the lab can learn from Dr. Momeni by taking his Multiscale Material Design course and Engineering Materials Laboratory or Multiscale Modeling of Phase Transformation in Mate-

rials, a course that he designed to increase opportunities for student research by providing specialized training in solid mechanics and materials science.

As he moves forward in his innovative research, Dr. Momeni is committed to improving experiences for Engineering and Science students both in his lab and in his class.

"While I am grateful for all the opportunities that Louisiana Tech, the Institute for Micromanufacturing and the College of Engineering and Science have given me, I am most thankful that I am able to create opportunities for students to better understand materials science. Through my classes and lab, I hope to provide students opportunities to pursue multiple avenues of research that focus on material design."

• • • •

*"The College of Engineering and Science, and particularly the Mechanical Engineering program, has a nurturing environment that provided me with the mentoring I needed to achieve my career objectives. Furthermore, the Institute for Micromanufacturing facilitated my collaboration with faculties in my area of expertise, which provided a fruitful ground for my research. I hope that I am able to pay some of that forward to the students I engage with."*

- Dr. Kasra Momeni

#### Recent Publications

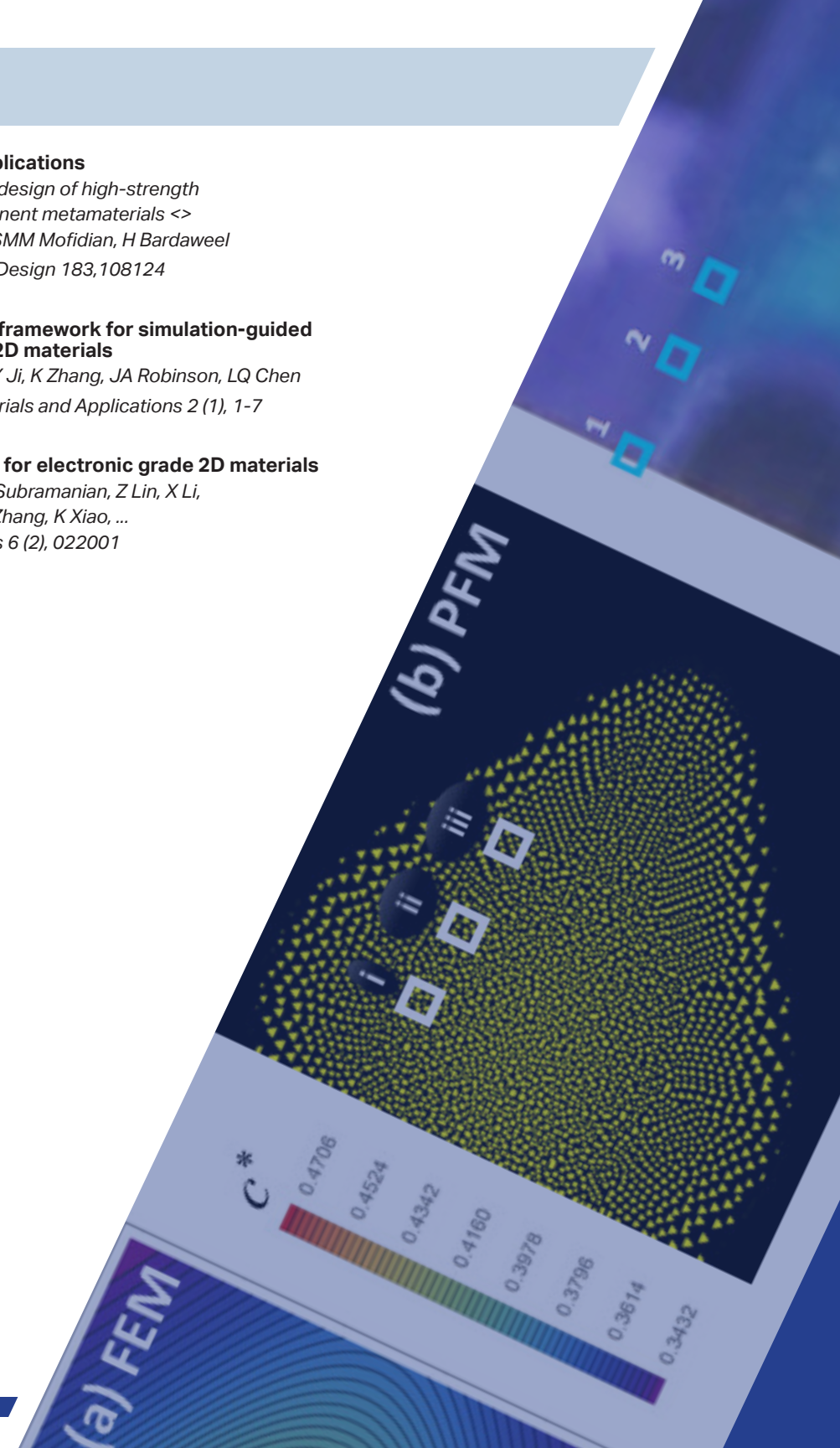
*Systematic design of high-strength multicomponent metamaterials <>  
K Momeni, SMM Mofidian, H Bardaweel  
Materials & Design 183,108124*

#### Multiscale framework for simulation-guided growth of 2D materials

*K Momeni, Y Ji, K Zhang, JA Robinson, LQ Chen  
npj 2D Materials and Applications 2 (1), 1-7*

#### A roadmap for electronic grade 2D materials

*N Briggs, S Subramanian, Z Lin, X Li, X Zhang, K Zhang, K Xiao, ...  
2D Materials 6 (2), 022001*







GLOBAL  
GRAND  
CHALLENGES  
SUMMIT 2019

ENGINEERING IN AN  
UNPREDICTABLE WORLD  
Chen Xi

GLOBAL  
GRAND  
CHALLENGES  
SUMMIT 2019  
ENGINEERING IN AN  
UNPREDICTABLE WORLD



# GRAND CHALLENGE SCHOLARS PROGRAM

## ENGAGING THE PROBLEM-SOLVERS OF TOMORROW

The Grand Challenge Scholars Program (GCSP) provides engineering students at Louisiana Tech with the blueprint to expand their academic portfolio beyond the norm. To date, 39 Tech students have completed the program curriculum, gaining outreach experience and supplemental knowledge through internships, research and course study in subjects that supplement an engineering degree.

Last September, two seniors in Tech's program had the unique opportunity to participate in the 2019 Global Summit in London, an international conference where they worked with colleagues from the U.S., U.K. and China to learn new ways to address global engineering problems. Savannah Esteve (biomedical engineering) and Luke Hansen (mechanical engineering) attended the 2019 Global Summit in London with National Academy of Engineering GCSP chair and Louisiana Tech College of Engineering and Science associate dean for strategic initiatives Dr. Katie Evans.

For Savannah and Luke, the trip included a Global Collaboration Lab that spanned two days before the summit officially began. During the Collaboration Lab, they competed in an innova-

tion hackathon during which they and their international teams had 48 hours to develop solutions to global grand challenges and create a business pitch based on their solutions.

"Working under high pressure with a team I had just met to innovate a solution to a global problem was an extremely daunting task at first," Savannah said. "Yet, on the final day of the Collaboration Lab, all 50 groups delivered incredible presentations suggesting business ideas, products and services that could possibly change the world. Seeing the ideas and solutions that we could create by bringing together diverse perspectives and skillsets was quite inspirational."

• • • •

*"Attending the Global Grand Challenges Summit was an eye-opening experience that will undoubtedly influence my future decisions as an engineer. "Louisiana Tech has prepared me to serve not only our community but people around the world – and for that, I am eternally grateful and will constantly work to repay everything this University has given me."*

- Savannah Esteve

The remaining portion of the trip consisted of four days learning engineering techniques from company executives, entrepreneurs and renowned research scientists who spoke on a variety of topics, including artificial in-

telligence, disruptive technologies and the sustainability of the planet. Over four days, Luke and Savannah sat in on presentations and discussed solutions and approaches to "Engineering in an Unpredictable World" with hundreds of other experts. More than 700 students, engineers, researchers, innovators, entrepreneurs, and policymakers attended the conference portion of the summit.

"The most important thing that I learned at the summit is that working on a multi-cultural team can provide a lot of unique solutions to problems," Luke said, "Louisiana Tech prepared me for the challenges that came up due to team member differences. In the year prior to this conference, I had the opportunity to serve as the president of Tech's International Student Organization. Tech was one of the first schools to have a GCSP, and I am grateful I had the opportunity to represent the University in London."

• • • •

*"Attending the GCSP Summit in London was an experience of a lifetime. The location was beautiful, but I found the people and topics of conversation to be far more memorable. The conference was a collaboration between the U.S., the U.K., and China, and as a result, I was able to meet brilliant and innovative people from across the world. The first four days were very interactive and equipped students to*

*solve grand challenges, and the last two days provided very talented guest speakers."*

- Luke Hansen

• • • •

*"We are always proud of our graduates and are glad that we were able to facilitate this special experience for Luke and Savannah, who brought back and shared the knowledge they gained with many other students here at Tech. GCSP can truly open doors and perspectives to the world around us."*

- Dr. Leland Weiss,

GCSP advisor for Louisiana Tech, director of civil engineering, construction engineering technology and mechanical engineering and associate professor of mechanical engineering.

### 2020 GCSP GRADUATES

**McKenna Barker** (biomedical engineering)  
**Alisha Brown** (biomedical engineering)  
**Savannah Esteve** (biomedical engineering)  
**Luke Hansen** (mechanical engineering)  
**Anna Opel** (civil engineering)  
**Luke Seaton** (mathematics and statistics)  
**Leann Tengowski** (biomedical engineering)  
**Parker Willmon** (biomedical engineering)



# HANDS-ON GOES ONLINE

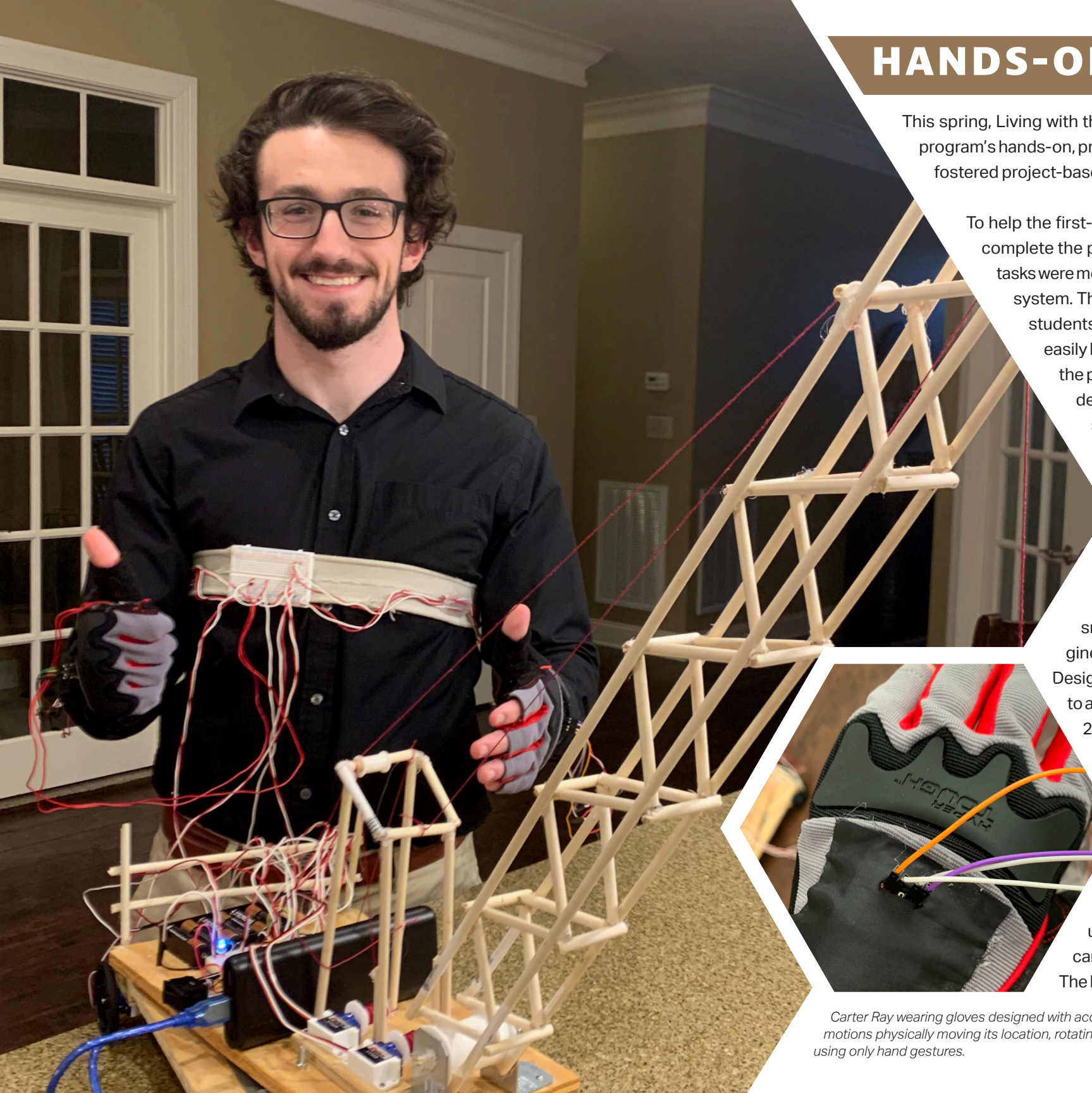
This spring, Living with the Lab faculty and staff transitioned the program's hands-on, project-based curriculum into courses that fostered project-based learning in a remote environment.

To help the first- and second-year engineering students complete the program's signature projects from home, tasks were modified to fit within the new remote learning system. The robot challenge was altered to require students to complete a variety of tasks that could easily be done in their homes. The guidelines for the pump project were shifted to develop students' 3D modeling skills while also emphasizing the fundamental concepts related to pump efficiency. Because students did not have access to the on-campus fabrication equipment, the fishtank project was adapted to focus on the control system portion of the project.

The biggest project of the series, the smart design project, which first-year engineering students submit to the Freshman Design Expo, went from an in-person, team task to a remote, individual undertaking. More than 230 students submitted projects built using their Arduino microcontrollers and circuit components. Students filmed their completed products and submitted assignments through Moodle to show their working circuits.

The 2020 Freshman Design Expo products ranged from ways to improve medical care to household upgrades to pet supplies. The level of creativity, innovation and ingenuity

*Carter Ray wearing gloves designed with accelerometers and buttons to control a crane's motions physically moving its location, rotating its position and lowering its cable remotely using only hand gestures.*





of the projects were so impressive that the Living with the Lab team added a new prize: the Student Choice Award, which was voted on exclusively by other students in the competition. Other awards were selected through a vote by faculty, staff, alumni and the Louisiana Tech community.

In addition to the Student Choice award and the top awards overall, the teams competed for the Da Vinci Award for the most creative project, the Makers Award for the best-constructed prototype, the Can-Do Award for the most challenging project that worked and the Patent Pending Award for the most novel yet practical idea.

• • • • •

*“Over the break between the winter and spring quarters, the project-based learning office rushed to assemble additional kits for the ENGR 120, ENGR 121, ENGR/HNRS 122, and ENGT 122 courses. We were lucky to have classes meet three days at the beginning of the spring quarter and were able to distribute the kits to the students. These kits gave the students various project components which allowed them to conduct many of the hands-on activities that would normally be held in the classroom environment.”*

*- Dr. Krystal Corbett*

## FRESHMAN DESIGN AWARDS

### 1st Place Overall

**Cody Killgore**

*Survey Meter Calibration Assistant*

### 2nd Place Overall

**Carter Ray**

*Control with Only Gestures (C.O.G.)*

### 3rd Place Overall

**Ben Leethy**

*Ped-Detector*

### Da Vinci

**Brennon O'Laughlin**

*Flex Tech*

### Makers

**Nolan Yelverton**

*Pet Feeder 9000*

### Can-Do

**Paden Deas**

*The Hands-Free Mailbox*

### Patent Pending

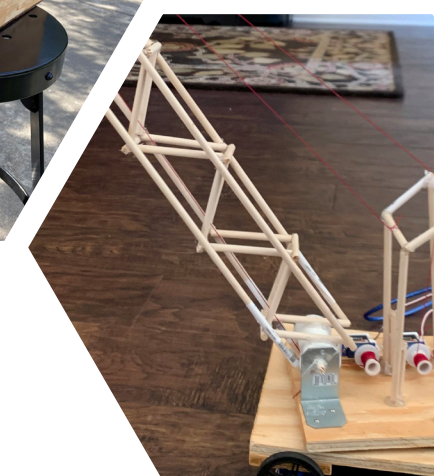
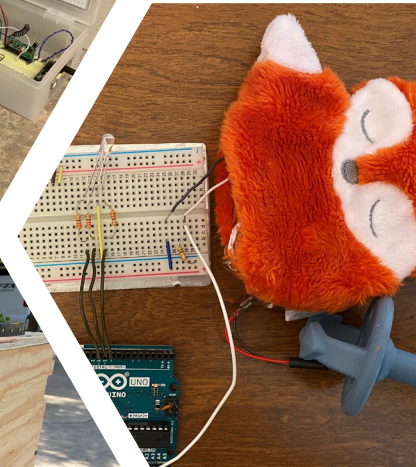
**Grace Cain**

*Pacifier Thermometer*

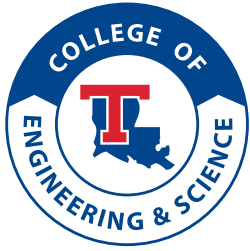
### Student Choice

**Carter Ray**

*Control with Only Gestures (C.O.G.)*







COLLEGE OF ENGINEERING AND SCIENCE  
LOUISIANA TECH UNIVERSITY  
P.O. BOX 10348  
RUSTON, LA  
71272

NONPROFIT  
ORGANIZATION  
U.S. POSTAGE  
**PAID**  
EMP

#### OUTSTANDING SENIORS 2020

**Abby Walker** *Mechanical Engineering*  
**Abigail Olsen** *Industrial Engineering*  
**Alisha Brown** *Biomedical Engineering*  
**Alyse Jones** *Electrical Engineering*  
**Destiny Hicks** *Chemistry*  
**Grant Ledet** *Electrical Engineering*  
**Katya Opel** *Civil Engineering*  
**Lora Johnson** *Chemical Engineering*  
**Luke Hansen** *Mechanical Engineering*  
**Parker Willmon** *Biomedical Engineering & Mathematics*  
**Sammy Monk** *Industrial Engineering*  
**Savannah Esteve** *Biomedical Engineering*  
**Sierra Napoleon** *Chemistry*  
**Sydney Thibodeaux** *Civil Engineering*



**PREPARING ENGINEERS AND SCIENTISTS FOR TOMORROW**

