



HensonNews

SPRING 2024

Produced by Salisbury University's Henson School of Science and Technology

From the Henson Dean's Office



Greetings from the Dean's Office of the Henson School of Science and Technology!

Welcome to another edition of Henson News! In this issue, we celebrate the incredible accomplishments of our alumni community. From groundbreaking research to

inspiring leadership roles, their stories showcase the lasting impact of a Salisbury University STEM education.

But these achievements aren't just a point of pride – they directly connect to the success of our current students. Our alumni network is a living testament to the potential that lies within each and every one. Their diverse career paths demonstrate the vast opportunities that await our students after graduation. Knowing that graduates from our program have gone on to achieve such remarkable things is sure to fuel their motivation and help them chart their own path to success.

So, as you read and appreciate the stories of Delany, Omar, Veronica and Laurie, remember: the legacy of our alumni paves the way for the future accomplishments of our students. Please consider sending in your own story as an inspiration to both SU faculty and students alike – we would love to hear from you!

– Dr. Michael Scott, Dean

Henson Alumni SPOTLIGHTS

In this issue of *Henson News*, enjoy articles by and about our alumni and reconnect with these impressive graduates who share how Salisbury University jumpstarted their careers.

Seeing the Geological Big Picture

Delany Midash '22

Delany Midash discusses her career path from SU to now. She graduated from SU in spring 2022 with a degree in earth science. After graduation, she transitioned from intern to geotechnical aide at Hillis-Carnes Geotechnical Engineering in Delmar, MD, before being promoted to laboratory manager in October 2023.

Delany's career path really came into focus after she did research with Dr. Brent Zaprowski through the Henson School Summer Research Program in 2021. Delany and Zaprowski spent the summer collecting sediment samples along Broad Creek (a tributary of the Nanticoke River) and processing them in Zaprowski lab. The research was also the basis of her honors thesis.

I was a student researcher and had the opportunity to work with Dr. Zaprowski over the course of a summer studying the geomorphology of transitioning environments along a tributary of the Nanticoke River. By identifying and classifying



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different depositional environments along a tributary that runs perpendicular to a larger body of water we were able to catch a glimpse on how rising sea level will affect flooding tidal flats. This research project was the topic of my honors research thesis. This project entailed field collection, soil classification, laboratory grain size analysis, loss on ignition testing and mapping. This project pushed me to utilize what I learned from various courses within the geoscience program.

I believe my experience as a student researcher played a major role in shaping the course of my career. After completion of my honors thesis, I worked as an intern at the Geotechnical Engineering firm and then as a geotechnical aide where I am currently employed. As an intern, I primarily classified soil borings and performed grain-size analysis, which were skills I already had from my time working with Dr. Zaprowski. The foundation of knowledge I built at Salisbury University and specifically during my time researching helped jumpstart my career because I was able to go into the work force already equipped with practical skills and experience. Working with Dr. Zaprowski gave me the ability to see the



geological big picture and want to unravel the mystery that is the earth beneath our feet. It was the motivation needed for a career in geotechnical investigations. I passed the ASBOG Fundamental of Geology Examination, and I am currently working on my field requirements to take the Professional Geologist Licensure Exam in two years.

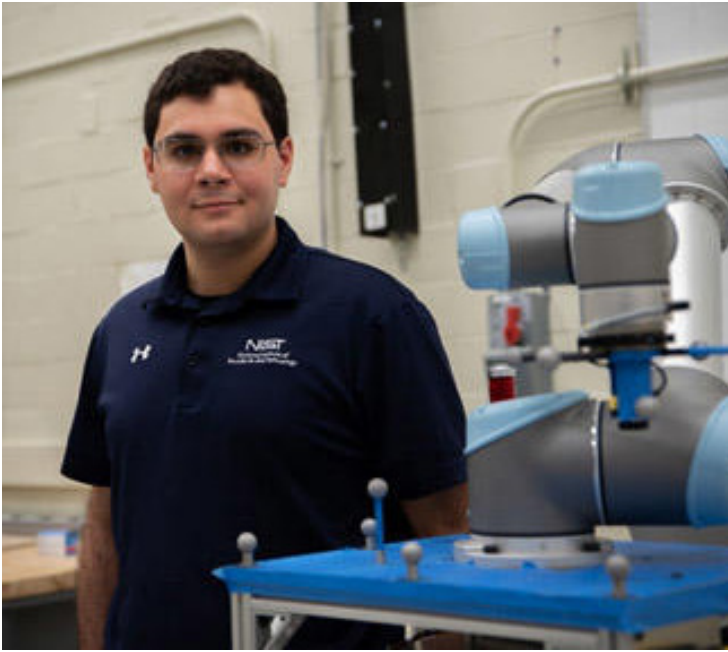
The Role of Measurement Science and Standards Development in Manufacturing Robotics and STEM Career Growth

Omar Aboul-Enein '18

Omar Aboul-Enein joined the National Institute of Standards and Technology (NIST) as a computer scientist in August 2021, having previously completed three years of the NIST Pathways Internship Program, four summers in the Summer Undergraduate Research Fellowship Program (SURF) and two summers in Summer High School Internship Program (SHIP). At NIST, Omar supports the Measurement Science for Manufacturing Robotics Program by working on the development and validation of metrics, test artifacts and test methods to evaluate mobile manipulator systems and coordinate registration methods.

From machine tending to large-scale part fabrication, such as aircraft wings, wind turbine blades, ship bows, the enhanced autonomy offered by robotics systems stand to improve the ways in which we prototype, assemble and process industrial components. However, to enable task adaptability and reliable use of these technologies, robotics manufacturers, integrators and end-users need accessible





performance measurement methods and performance uncertainty. For example, consider mobile manipulators, which are robotic systems that feature a manipulator using an Automatic – Autonomous Unmanned Ground Vehicle to move between task locations. Many factors, including, but not limited to, limitations in mobile robot sensors, localization algorithms and industrial environmental conditions can degrade the performance of these systems such that they fall short of the accuracy and precision needed for the processing and fabrication of curved, complex parts.

The National Institute of Standards and Technology (NIST) is a federal agency under the United States Department of Commerce (DOC). Our mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards and technology in ways that enhance economic security and improve our quality of life. With respect to manufacturing robotics, this translates to conducting research toward advancing metrology for robotics and autonomous system performance through the development of measurement science to allow key stakeholders to evaluate their systems and technologies. We also work closely with standards development organizations (SDOs) such as ASTM International, the International Organization for Standardization and IEEE, among others, to assist in the development of new standard test methods to measure robot performance.

Aside from fostering innovation of new technologies like robotic systems, standards development offers a wealth of career growth opportunities for undergraduate STEM students. NIST, located in Gaithersburg, MD, offers a range of internship programs including the Summer Undergraduate Research Fellowship (SURF), the Professional Research Experience Program (PREP) and the Pathways program, which all give students the opportunity to use their classroom experience in a federal laboratory and to the benefit of

technologies that may have far-reaching economic and societal benefits. Participation in SDOs is also a great opportunity to network with fellow professionals in your field that hold a wide variety of perspectives. In my own time at SU, the diligent work of professors and administrators, who had my best academic and career interests at heart, allowed me to participate in SURF for all four summers of my undergraduate education. My SU classroom experience in systems software, design of experiments, linear algebra and software engineering were essential to developing and implementing the test methods and scenarios to evaluate mobile manipulators. Working with SU staff also gave me my first experience in conducting academic research, which led to a conference paper published in the International Mechanical Engineering Congress and Exposition (IMECE). It was also the start of my journey in standards development in ASTM Committee F45 on Robotics and Automation, which gave me valuable experience in collecting the industry feedback that results in potential new areas of robotics research and provided the foundation for future leadership as F45.05 Subcommittee chair.

How can standards development and measurement science jump start your career? Feel free to reach out to me at omar.aboul-enein@nist.gov to inquire about NIST internship opportunities!

Unwavering Support on My Journey

Veronica Martinez Vargas '16, PA-C

My exposure to Salisbury University was solidified in my final year of high school at James M Bennett [in Salisbury, MD] when my biology teacher introduced us to the Science Nights @ SU program, a groundbreaking initiative designed to educate high school students about STEM disciplines. I attended and found immense enjoyment in the physics and chemistry nights. We built a bridge with sticks in the physics classroom, and I recall perusing the chemistry pamphlet, which featured snippets of professors' research and highlighted the instrumental role of chemistry in medicine. This program was made possible through the efforts of professors like Dr. [Joseph] Howard and Dr. [Karen] Olmstead, who secured a grant for the NSF's STEM Talent Enhancement



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Program. Little did I know that these professors would later become not only my advisors and mentors but also vital members of my support network upon my enrollment at SU and for years to come.

When I graduated from high school, the Maryland Dream Act had passed, but it was put into referendum, which meant I would still need to pay out-of-state tuition as an undocumented immigrant. I decided to start with my associate degree at Wor-Wic [Community College], then transferred to SU only after the Maryland Dream Act was signed into legislation thanks to the advocacy of the community and voters in Maryland. Though I started with the intention of majoring in biology, my trajectory shifted after my first semester at SU. Organic chemistry, taught by Dr. [Seth] Friese, ignited a fascination with the vibrations of atoms and the insights they offer through instruments like the IR spectrometer. Simultaneously, physics with Dr. Howard compelled me to explore the intersection of these concepts. Ultimately, I chose to major in physics with a minor in chemistry.

Financial challenges loomed large, as my DACA (Deferred Action for Childhood Arrivals) status rendered me ineligible for federal loans. However, Dr. Howard's belief in my potential led him to introduce me to Dr. Olmstead, then the dean of Henson, who awarded me the SU STEM Scholarship, which significantly alleviated my financial burden.

While doubts lingered regarding my path to becoming a clinician, I sought out summer internships under the Physics Department's guidance. My first internship at NIST (National Institutes of Standard and Technology) during summer 2015 involved working on a sensor capable of identifying biomolecules in complex solutions and a pivotal moment arrived after my internship at NIH summer 2016, reigniting my passion for pursuing a career in medicine. Upon my return and last semester at SU, I enrolled in Dr. [Victor] Miriél's Vascular Biology Research class, fueling my drive to push the boundaries and realize my dream of becoming a clinician.



I never expected to have gotten all the opportunities and the many doors opened when I came to this country at 10 years old from a very small town in Mexico, but SU showed me otherwise. Now, as a freshly graduated and board-certified physician assistant from CUNY School of Medicine, I am profoundly grateful for my time at SU and the faculty who never wavered in their support of my journey.

Pursuing Passions: Learning and Mathematics

Laurie Short '21

As a proud alumna of the Henson School of Science and Technology, I am excited to share how my time at Salisbury shaped where I am today. From my first day at Salisbury, I knew that I wanted to pursue mathematics with a focus on education.

My mother, a fellow SU alum, taught high school math for 30 years, and her love for her profession inspired me to follow in her footsteps. I assumed that would also be as a high school educator, but it was the encouragement and inspiration I found at Salisbury that led me to a new goal: becoming a professor. Dr. Robert Tardiff was the first to ask me if I had considered pursuing a Ph.D. During my freshman calculus class, he posed a question that would lead to my first undergraduate research project.

We worked together to formulate my ideas on an alternate proof method into an article published in *MathAMATYC Educator*. Upon publication, we heard from several professors across the country saying they would be using this method in their calculus courses. This was my first research experience, and I enjoyed exploring ways in which we can make math more accessible to undergraduate students. I was able to participate in several more research projects at Salisbury University, joined countless clubs and organizations, and was a Supplemental Instructor (one of my favorite parts of SU!) for seven semesters.

As I continued my studies, I was asked many more times if I had considered graduate school. Encouraged by my professors, I applied to mathematics graduate programs and attended the University of North Carolina at Chapel Hill. At UNC, I found a vibrant community and became a mentor, joined mathematics associations and engaged in research in algebraic topology. At first, I thought that my aspirations were



done evolving, but I soon realized I had still not quite found my niche. Though I thoroughly enjoyed my courses and research, I missed studying the ways we teach and learn mathematics.

During this time, though, one thing was certain. I had found my calling teaching at the college level. Teaching and working with students quickly became one of my favorite parts of the week, and I was honored to receive the Linker Award for showing the greatest effectiveness as a teacher of undergraduate mathematics. As I progressed in the program, I knew that I wanted teaching college to be my career, but I continued to miss my roots in math education. So, I finished up my master's degree in mathematics this fall, and I am now pursuing my Ph.D. in mathematics education at North Carolina State University.

I am thankful for the professors at Salisbury who helped me know it is okay for dreams to change, and I am ecstatic to

have found a path I truly love. With this degree, I will be able to pursue my dream of teaching at the college level, while getting to research a combination of the two things I am most passionate about: learning and mathematics. Since my first research project on proof methods with Dr. Tardiff, I have been interested in studying how we teach students in their first proof-based course. I am thrilled to be able to continue this research I started my freshman year in my doctoral dissertation. I am grateful for the foundation that Salisbury University provided me and know that I would not be where I am today without the amazing professors in the Henson School. My dream is to one day inspire students the way that they inspired me, hopefully as a professor in the Salisbury University Mathematics Department.

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