University *of* New Haven

TCoE Trends

Newsletter of the Tagliatela College of Engineering, University of New Haven

Winter 2023

Dean's Remarks

As we emerge from the pandemic, life is slowly returning to normal, albeit with somewhat different emphases and orientations. One benefit of the pandemic was people's adaptation to technology. Even those who shied away from digital print content and videoconferencing became comfortable with these forms of communication, and post-pandemic, these forms are here to stay. During the pandemic we published a digital version of TCoE Trends that was efficient to produce and easy to distribute. However, for some of you, digital content can never replace paper. There is something convenient and timeless about browsing a paper newspaper or newsletter. Therefore, this version of TCoE Trends is being published both digitally and on paper. Please let us know if you receive a digital version of this newsletter and would like future newsletters in print.

As you will see from the content of this newsletter, the momentum of the Tagliatela College of Engineering continues unabated post-pandemic. We were able to hold our Capstone Design Expo in person, and the College is the largest it has ever been with respect to both student and faculty size. We were thrilled to be able to resume our biennial Alumni Dinner and Hall of Fame Awards Ceremony in person. We look forward to reengaging with you more regularly.

Ron Harichandran, Dean

Two New Endowed Chairs Spur Optimism and Opportunity

Alice E. and Michael J. Fischer.

She came to the University of New Haven 40 years ago as an instructor. Within a year, she launched the undergraduate program in computer science and has led it ever since, designing courses and exploring operating systems, data structure, algorithms, and all the developments that evolve at breakneck speed in the field. In the process, she became one of the University's most beloved teachers to generations of students.

With all that she gave to the University, however, she wanted to give more.

She gave a lot more. Last year, Alice Fischer, professor of computer science, and her husband Michael, a computer science professor at Yale University, gave $2 million to establish the **Alice E. and Michael J. Fischer Endowed Teaching Chair in Computer Science.**

The funds will be used to bolster computer science at the University for many years to come, with the specific mission to recruit and retain faculty. Fischer, who earned her B.S. in Mathematics with distinction from the University of Michigan and her M.S. in Applied Mathematics and Ph.D. in Computer Science from Harvard University, is passionate about the teacher–student connection and the importance of teachers spending enough time in the classroom.

"Every time someone has retired, they've been replaced with someone with very good proven research potential who doesn't teach as many classes," she observed. "This Endowed Chair is intended to turn that around."

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As a private university, with smaller-sized classes, the University of New Haven already prides itself on the dedication of its teachers to their students and the fact that they know their students by name and individual strengths. At no time has that teacher–student relationship been more important than now, as schools emerge from two years of remote learning in pandemic-world.

Computer Science students are reigniting their career dreams, and thanks to the new teaching chair, those dreams will be bigger and attract more faculty attention than ever before.

Meanwhile, civil engineering students — who inherently think big — are also having their career goals buttressed, thanks to the **Tagliatela Family Endowed Chair in Civil Engineering.**

The Tagliatela family has been supporting the TCoE, as well as its civil engineering programs, since 2005 — the same year they gave the College its name.

Over the past 17 years, the family has created countless opportunities for the College to expand and for students to develop into career-ready graduates who are in demand by local, U.S.-wide, and international companies.

Not content with simply funding a new Chair, the family also recently established the Tagliatela Family Scholarship in Civil Engineering, and the Tagliatela Family Civil Engineering Laboratory.

Altogether or separately, that's a lot for students to build on.

The Summer of '22: A Golden Opportunity for Research

Last summer, as members of the University's Summer Undergraduate Research Fellowship (SURF), two engineering students pursued what interests them most in their field.

Chemical engineering student Madison Liguori '23 and her faculty mentor Huan Gu, Ph.D., an assistant professor of chemical engineering, collaborated closely on **"Skin Thinning Mediated Bacterial Penetration During Space Travel,"** giving Liguori priceless experience in hands-on research.

Assitant Professor Huan Gu, Ph.D., and Madison Liguori '23

The project studied the impact that space travel has on the skin of astronauts. "When astronauts embark on a space journey, they undergo different levels of gravity," Liguori explained. "This environmental change causes them severe skin-related issues. Staphylococcus aureus is one of the opportunistic bacteria that commonly reside on our skin and can cause persistent infections as it penetrates the skin's surface."

Using a microcentrifuge and a bacteria-to-fluid solution to mimic the gravity changes in space travel, they were able to conclude that microgravity (the state in which people or objects appear to be weightless) encourages bacteria to become more resistant to antibiotics.

Liguori's goal is to use her knowledge of space travel-related skin issues in a future career as a chemical engineer in the cosmetics industry. In a global industry worth more than $380 billion, understanding how skin responds to a variety of stimuli has a gravity all its own.

"Determining the Oil Content of Seaweed Native to Connecticut for Biofuel Production" was the title of the project explored by another **chemical engineering student, Timilehin E. Oluwole, and her faculty mentor Kristine Horvat, Ph.D.,** an assistant professor of chemical engineering.

Although the search for alternative, cleaner biofuels is nothing new, and the potential for algae-based biofuel has been researched for years, its economic viability has been the subject of heated discussion, which has impeded any commercial-scale production.

Timilehin and Horvat, therefore, set out to establish which of the seaweeds native to Connecticut had the greatest oil content and the most biofuel potential.

Three different seaweeds were collected — rockweed, sea cellophane, and mini sea lettuce. After drying them and extracting the oil from each, these were the findings:

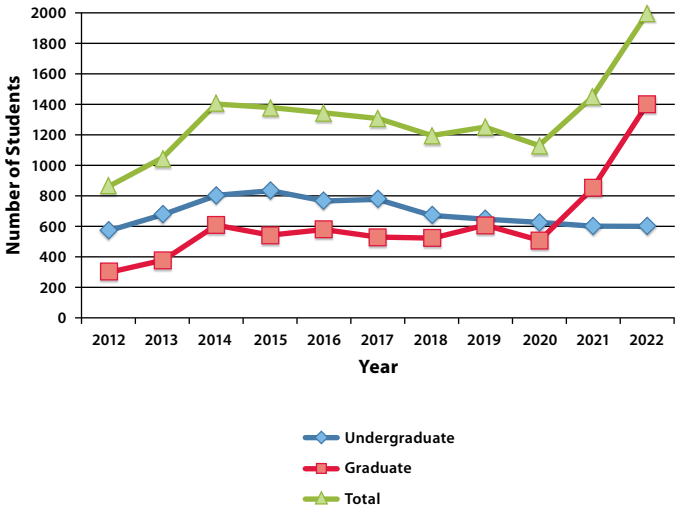
Sea cellophane was the undisputed winner, yielding 6.64% oil due to its large surface area, compared to 4.74% oil from rockweed, and a paltry 3.62% from the "shrimp" of the group, mini sea lettuce.

Although sea cellophane outperformed in oil yield, 6.64% isn't exactly impressive, partly due to the harvest area being out of sea cellophane's depth — that is, the samples were collected near the shoreline instead of going further out. Collecting from deeper waters will increase the chances of finding sea cellophane with higher oil content.

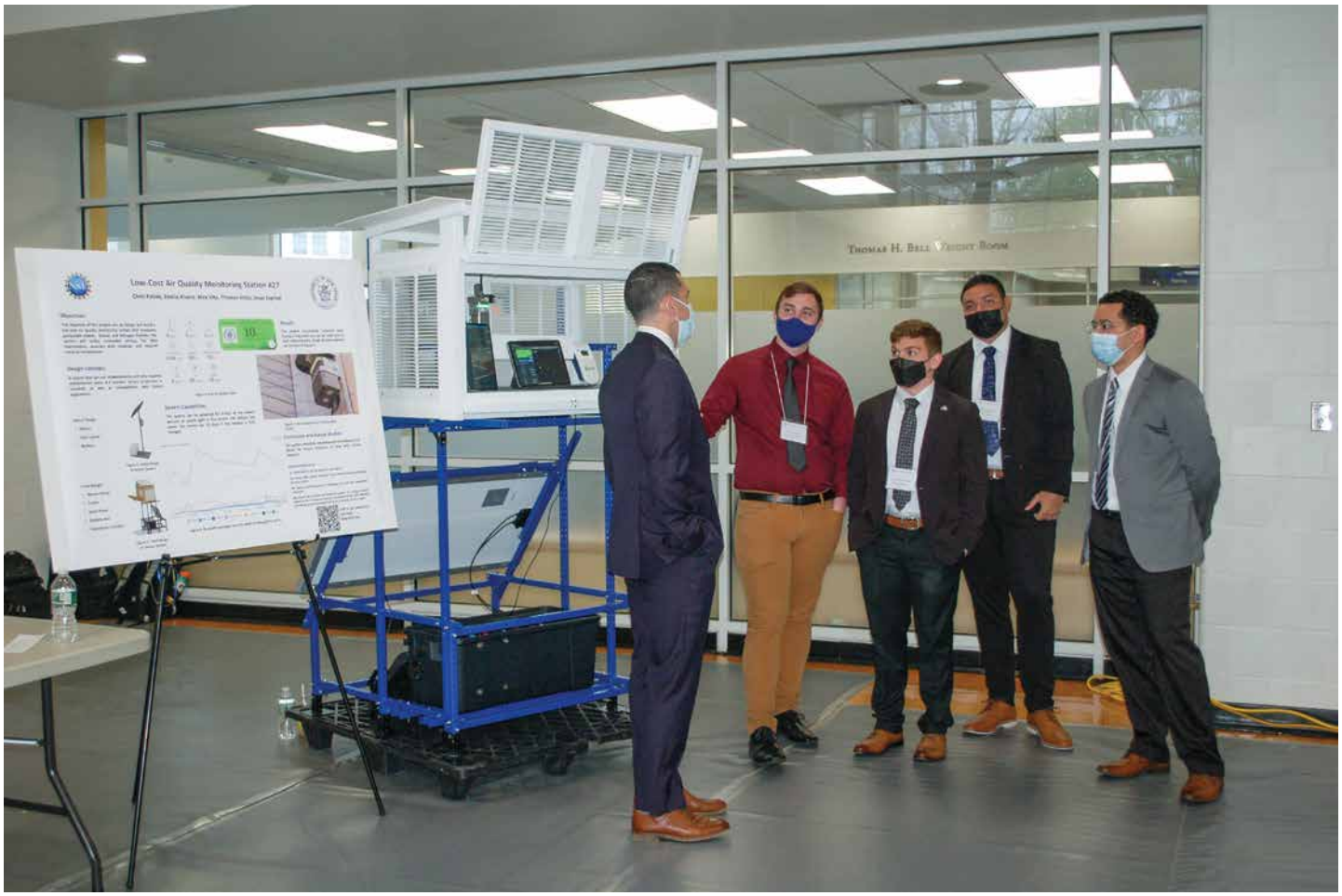
Conclusion: Native Connecticut seaweed is not out of the running as a potential biofuel source.

Graduate Enrollment for 2022 Rockets to Almost 900 More Students Than in 2020

While graduate enrollment in the Tagliatela College of Engineering predictably sagged during the pandemic, 2021 saw a surge of more than 300 more students as they began venturing out into the world again. But 2022's enrollment left 2021's big bounce in the dust by almost doubling its figures. International students provided most of the acceleration.



And … we're back. Capstone Design Expo Returns to In-Person Format



After two years of pandemic-imposed online presentations, seniors who dedicate two tough semesters to their Capstone projects were able to present their work face to face again and get the spontaneous audience feedback that means so much to them.

There were 34 projects in all, each a design solution that answered the need of a real or hypothetical customer. The outstanding success of the event was demonstrated by how difficult it was for the judges to pick the top three.

The awards to the winners were sponsored by Reid Hanford, vice president of the Lee Company, who serves on the TCoE's Advisory Board.

First Place: Medtronic Buttress Attachment Method

The suture buttress is part of a Medtronic Tri-Staple device used in operating rooms to cut tissue and sew it back up. The device reduces the risk of infection and decreases the healing time of wounds.

Goal of the project: Redesign the current proprietary release mechanism of the buttress after firing, making it more cost effective and less complex.

The solution: A new design that replaced two separate stainless-steel pieces with one plastic "push" piece that is both easier to use and less expensive to manufacture. Nine of the newly designed devices are being readied for testing.

Team members: Mechanical Engineering students Demetrius Holliman, Devika Singh, and John Luffman

Faculty advisor: Dr. Ismail Orabi

Second Place: Smart Park — An Intelligent Parking System

Commuter students were stressed about where to find a parking place — which lot to try, the availability of spots, and the search for one often making them late for class. A further downside is that driving around looking for a spot produces three times the carbon emissions as normal driving.

Goal of the project: Develop a real-time, intelligent parking system for campus that can track available parking spaces accurately, monitor parking occupancy, even recognize drivers' behavioral patterns, and verify and validate license plates.

The solution: Take advantage of existing security cameras on campus to analyze the number of available spaces in a given lot. No extra hardware is needed, and so no additional cost is incurred for it. The information is sent to a Smart Park website, where users can view how many parking spaces are free at a particular location.

Team members: Computer Science and Cybersecurity & Networks students Benjamin Greenfield, Benjamin Placzek, and Steven Atilho

Faculty advisor: Dr. Mehdi Mekni

Third Place: Mix Avenue Streets and Traffic Light Design

Connecticut Department of Transportation data show that 50% of drivers traveling through intersections are driving over the speed limit, resulting in crashes with pedestrians and cyclists.

Goal of the project: Use traffic-calming measures and redesign traffic lights on Mix Avenue to create fluidity through the intersections. Use Synchro — 4D construction management software — to synchronize traffic lights and gain a fully automated sequence displaying a visual representation of the improvements to motorists, pedestrians, and cyclists.

The solution: A design proposal that included a pedestrian cross light, traffic phase offset sync, and a 360-degree traffic detector camera at the intersections, with sidewalks, crosswalks, and bicycle lanes on Mix Avenue, and center rumble strips, flush printed pavement media, and high-friction surface treatment in other high-risk areas.

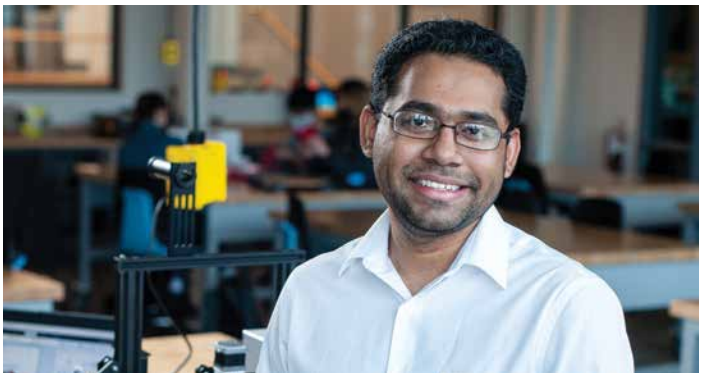
Team members: Civil Engineering students Elissa Nuzzo, Robert Sweet, Jake Chamberlain, and Justin Stelmach

Faculty advisor: Mr. Joseph Balskus

Funding from the NASA Connecticut Space Grant Consortium Revolves Around Earth, Moon, and Mars Research

Five faculty members have received generous grants from the NASA Connecticut Space Grant Consortium (CTSGC) to support their work on several cutting-edge research projects. The CTSGC Is a statewide higher-education grant, internship, and scholarship program funded as a part of NASA Education.

Omar Faruk Emon, assistant professor of mechanical engineering, received a grant to fund his work on a 3D printing



solution for fabricating polymer-based flexible sensors that can be used to measure strain, pressure, and temperature in the hostile environment of outer space. Because existing 3D printers often do not support functional polymers for printing electronics such as sensors, Dr. Emon was inspired to create a new printing system that would work with his polymer material. Successful 3D printing of polymer-based flexible sensors would not only create a new way to fabricate, adjust, and repair electronics, but it could also do it on demand, when it's needed and where it's needed. In other words, hundreds of miles above the Earth.

Dr. Emon will collaborate with two or three students on the project who, afterward, will present their research and engage in some major net-working at the NASA CTSGC Grants Expo.

Goli Nossoni, associate professor of civil and environmental engineering, and Dan May, professor of environmental science, received a faculty research grant for their project, "Moonglomerete for Construction on the Moon," which centers on developing a new material for the manufacture of bricks. Moonglomerete would be much lighter than concrete. In fact, it would be made from the moon rocks that punctuate the lunar landscape. Larger and lighter-colored moon rocks —

anorthosite — would be embedded in a binder made from smaller and darker-colored molten rock — basalt — to make the bricks. The grant also allows two undergraduate students to join Dr. Nossoni's and Dr. May's research efforts and explore the manufacture of out-of-this-world building blocks for the 21st century and beyond.

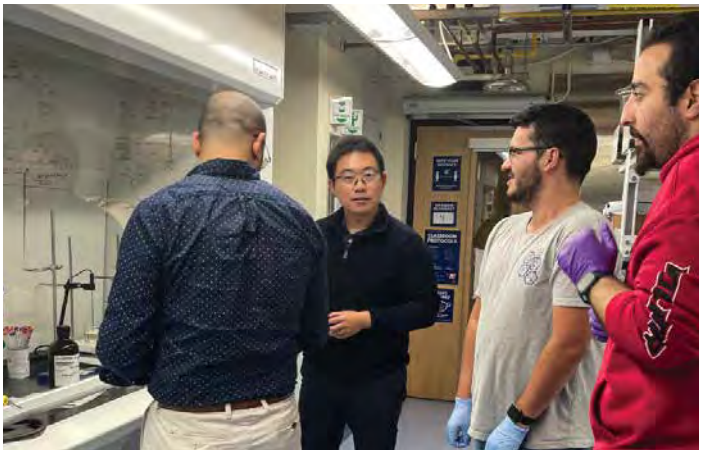
Mars has its own contributions to make, and **Kristine Horvat, assistant professor of chemical engineering,** is determined to access them. Her grant will help fund her research on the red planet's degree of hospitality to human life. As a good host, Mars would owe its guests certain amenities — oxygen and fuel, for starters. So Dr. Horvat is exploring how growing Chlorella algae under various pressure levels, temperatures, and gas-phase composition conditions — conditions that may exist on Mars — will affect its oxygen production and algae growth rates as well as its ability to produce oil for fuel under varying conditions. A very fortunate undergraduate student will participate in this project as a mentored research assistant — a résumé blockbuster for an undergrad.

Meanwhile, back on planet Earth, **Chong Qiu, associate professor of chemistry and chemical engineering,** is applying his grant

to exploring the application of ground ozone monitors and high-altitude balloons in detecting ozone in Earth's lower and upper atmospheres. Dr. Qiu is already prepping for two upcoming eclipses — a solar eclipse in October 2023 and a total eclipse in April 2024 — to gauge how the reduction of solar radiation will affect ozone levels. He plans to assemble a high-altitude balloon team as part of the Nationwide Eclipse Ballooning Project and take field measurements in the upper and lower atmospheres as the eclipses are happening. Dr. Qiu admits to being somewhat in the

dark about ballooning — describing himself as a beginner — but he's excited about the learning curve ahead of him and collaborating with his students and colleagues at the University of Bridgeport. The learning experience for the students will be intense and extremely hands on — they will design the payload, assemble the balloon, and conduct test launches in the field.

Prestigious Grant Could Spark Incredible Chemistry



second from left: Assistant Professor Hao Sun

Inexpensive, versatile, pliable, shapeable, and with useful applications in every sector of manufacturing, plastics — synthetic polymers — were a scientific breakthrough that has improved lives since they went into mass production after World War II.

The vision of great swaths of land and sea choked with plastic waste was not in the picture then, but it certainly is now. Hao Sun, Ph.D., an assistant professor of chemistry, sees it, doesn't like it, and is determined to do something about it. The important grant he just received from the American Chemical Society's Petroleum Research Fund will help make that possible.

Sun is the first University of New Haven professor to receive the highly competitive Undergraduate New Investigator Grant from the Fund. Over the next two years, it will support his quest to develop the next generation of polymer materials that are chemically recyclable but have the mechanical and thermal properties that are the upside of current commercial polymers.

Sun's ambition is to design new polymer structures that will easily depolymerize back into their original monomers — small molecule building blocks —that can then be reused to make a new polymer.

The students in Sun's research group will also be the fortunate beneficiaries of the $55,000 grant as they work closely with him in the Advanced Polymer Lab that he founded. The title of the project — "Transformation of Non-Depolymerizable Poly (oxanorbornene)s to Depolymerizable Polyolefins via Ring-Opening of Backbone Cyclic Ethers" — will create opportunities each year for at least five students to gain hands-on research experience.

Sun is excited about the opportunity for his students, for himself, and potentially for society. But the assistant professor, who joined the University in the fall of 2021, is also happy about how the grant reflects on the University of New Haven:

"Together with the University's other recent successes in securing grants from the National Science Foundation and the National Institutes of Health, this suggests the research activity at the University is rapidly growing and receiving increasing recognition from several high-impact funding agencies across the nation," he enthused.

Votes of Confidence

Two faculty members holding the position of Buckman Chair and Buckman Professor have been rewarded for their outstanding performance:

Dequan Xiao, Ph.D., Buckman Chair of the Department of Chemistry and Chemical & Biomedical Engineering, will hold that position for three more years.

Chong Qiu, Ph.D., Buckman Professor of Chemistry, will remain in his position for three more years as well. Dean Ronald Harichandran has also named Professor Qiu Assistant Dean for Faculty Research Development.

Maria-Isabel Carnasciali, Ph.D., Professor of Mechanical Engineering, has been elected to the Kern Entrepreneurial Engineering Network (KEEN) Leadership Council. The Network seeks to foster an entrepreneurial mindset in engineering students. The Council empowers the Network's partner institutions to shape and guide KEEN initiatives and activities.

Mehdi Mekni: Creating Winning Strategies for Game Design and Development, Cybersecurity, and a Partnership in Malawi

When computer science professor Mehdi Mekni came to the University of New Haven in 2020, he had a specific goal in mind and a passion to make it happen. He wanted to design a concentration in game design and development that would compete strongly with other concentrations in the field.

In short order, he put together a proposal that involved five courses, carving out a new, third pathway for the Computer Science program. Game Design and Development now joins the existing concentration of Cybersecurity within the B.S. in Computer Science program.

The first of the five courses was offered in the spring of 2021. Because it has almost no prerequisites, students from almost every college in the University enrolled. They learned about the history of games, trends, character development, how to design a game, story, narrative, animation – every element that had been making them lovers and consumers of games for years. Only in this course, they switched roles and became creators. They saw their very own brainchildren come to life.

Working in groups, the students came up with a game idea and built it gradually, week after week. As they learned about the various elements that go into a game, they incorporated them into their idea.

"The course might be demanding," says Mekni, "but students enjoy it immensely because they are working on something they love. They don't feel the time. They don't feel the burden of the job."

The outcome of the course is simple — by the end of the semester, students have an entire game design in their hands. That's a big moment, according to Mekni. He calls it "The Click." It's when students suddenly realize that by finishing the course, they are only four courses away from having the whole concentration.

For students already enrolled in the computer science program or in other engineering programs, that click is a jolt but not a huge one. For other students, however, the click is more of a nine-on-the-Richter scale earthquake.

"I had students majoring in music, in art, who changed to computer science," Mekni relates. That's an enormous adjustment for students in the arts or humanities, especially because of the rigorous coding and programming courses that are required.

"It's tough for them, but they see the outcome," he continues. "When they pursue a career in game design and development, they know they're going to have leverage that other people don't have — the artistic skill. They can draw. Or they can write or compose."

Game Design and Development — A Dual Skill Set

Mekni's statement points to one of the major features that sets this concentration apart from all others in the field — the dual skills. Whereas other institutions offer programs in game design — the creative part of the process — these same programs lack the coding chops needed to turn the game design into a reality. That's game development.

Mekni elaborates further on the difference between game design and game development. "Game designers are like architects," he explains. "They provide the concept and the exact specifications that will bring the concept to life." In game design, that includes things like storyline, narration, animation, and characters. Game developers, on the other hand, are like the contractor who builds according to the architect's exact specs. With game developers, that's done through computing and writing the code."

Mekni's new concentration enables graduates of the program to offer both skills to potential employers. That selling point has hit home with students. The University's Game Design and Development concentration within the B.S. in Computer Science now has 29 students in the program.

The Industry Partnerships That Propel Students Into Careers

Mekni, however, wanted to make this concentration even more irresistible to students and, ultimately, to potential employers.

He aimed to incorporate the participation and support of a major player in the game industry into the curriculum. Unity Technologies is one such player. The world's leading platform for creating and operating interactive, real-time, 3D content, Unity supplies the game engine — that is, the software framework — that enables developers to construct the game. The company leads the field with 65% of market share, which was what Mekni found most compelling.

Mekni had trained his sights on Unity, but how would he bring them on board? The answer promptly presented itself when Tech Talent Accelerator (TTA) invited him to submit a proposal for a grant.

TTA is a State of Connecticut initiative to help higher-ed institutions expand programs in in-demand tech fields. Mekni jumped at the opportunity, was approved for the $30,000 one-year grant, and then parlayed the funds into becoming a member of the Unity Academic Alliance.

The alliance with Unity not only provides access to Unity products such as the game engine and teaching materials, but it also includes one more feature that is worth many times more than the $30,000 Mekni invested. It gives students the opportunity — through Unity's training and practice tests — to earn a credential known as "Unity Associate Professional." This is an Industry-Recognized Credential that jumps out on a résumé and shouts "I can make a serious contribution from day one on the job."

Currently, 26 of Mekni's students are on track to pass the certification.

The GenCyber Agent Academy: Going Back to High School

As with all colleges, the Tagliatela College of Engineering begins its enrollment efforts in high school. One of those efforts — the GenCyber Agent Academy — has made a significant impact by getting high school students excited about pursuing cybersecurity studies at the College. A unique and rigorous summer camp, the GenCyber Agent Academy offers students intensive, hands-on practical learning in what it takes to become one of the good guys and protect the nation from cyber attacks.

In the summer of 2021, Mekni became a part of the Academy, teaching a class of 40 students some of the essential cybersecurity skills that would prepare them for further study. It wasn't long before he began to think about targeting high school teachers instead of students, reasoning that by educating the teachers, he could potentially reach many more students.

"If you teach the teacher, that teacher will shape, influence, and improve the preparedness of students year after year," he explains. The funding agencies for the GenCyber Agent Academy — the National Security Agency and the National Science Foundation — agreed wholeheartedly, and Mekni received the funds to create Connecticut's first GenCyber Teacher Academy. Geared toward teachers with STEM backgrounds, the weeklong program, whose inaugural session was in August of 2022, gives teachers all of the tools they need to incorporate cybersecurity education into their high school programs. Lesson plan designs, lectures, labs, equipment — even a free Chromebook — are all part of the package.

The teacher version of the Academy is every bit the enrollment effort that the GenCyber Agency Academy for students is. Teachers who were in the August session have subsequently called Mekni with invitations to speak to their classes. At Eli Whitney Technical High School in Hamden, Connecticut, Mekni identified the best students, made a strong pitch for the Tagliatela College of Engineering, and then invited the rest of the students to spend a day on campus, sit in on his classes, and live the experience of being part of the College.

Doing the math, Mekni figures that of the 25 teachers in the GenCyber Teacher Academy, if just five of them ask him to speak to their classes, he reaches about 120 students, potentially landing 20 or 30 of them for the College. But the number of students isn't the big thing in the end, he emphasizes. "I'm going for quality. I want only the best to dream of coming here."

One Fulbright Grant: 26 Days in Southeast Africa

Working a month-long stay abroad into a busy teaching schedule isn't easy, but landing a prestigious Fulbright grant has a way of dissolving obstacles. Toward the end of the Fall '22 semester and continuing into the winter intersession, Mekni consulted at the University of Mzuzu in Malawi as one of a select group of academics chosen by the Fulbright Specialist Program to conduct projects at institutions across the globe.

Mekni's project fell under the Program area of enhancing computer science and information technology education. In his role as ambassador for the University of New Haven, he reviewed and expanded on the University of Mzuzu's curricula in cybersecurity and networks.

He carried out his work at both the undergraduate and graduate levels, with a special focus on their proposed M.S. in Networks and Cybersecurity.

Ron Harichandran, dean of the Tagliatela College, sums up the outcome of the effort: "Mehdi is building a relationship between Mzuzu University and the University of New Haven that promises to serve as a bridge to strengthen future collaborations and allows students from Malawi to study at our University."

When they do come, there's a good chance that Mekni's Game Design and Development concentration will turn out to be one of the main attractions.

Alumni Dinner Hits Restart

After two years of missed dinners, graduates of the TCoE, beloved donors, and faculty were eager to return to the table in October for an Alumni Dinner that had been on pause due to the pandemic.

After the rush of pleasure at seeing one another in person again and catching up on any news that had been in storage, three major awards added even more sparkle to the conversation.

Ann Cox '83 received the Distinguished Lifetime Alumni Award. A project manager for Johns Hopkins Applied Physics Laboratory, and with degrees in civil and structural engineering and a P.E. license in mechanical engineering, Cox has spent more than 30 years working in the aerospace industry. She played a critical role in missions to the moon and Mars as well as space shuttle missions and credits her professors at the University of New Haven for helping to launch her phenomenal career.

"The professors brought such varying backgrounds," she recalled. They were people who had their own companies on the side, had 30 years' experience building things, and could share what worked and what didn't."

When, at one point in her career, she was hired by Rockwell Industries — a major manufacturing conglomerate involved, at the time, in the aircraft and space industries — it was because of its interest in her structural and stress-analysis work, the kind of work she had performed at the University as a civil engineering major.

"Early on at Rockwell, the structural analysis classes and the modeling I had done at the University really helped," declared Cox. "Within three years, I got a lead engineer position. I was a civil engineer from the University of New Haven among MIT and Stanford grads."

The Outstanding Young Alumni Award, which honors alumni who have graduated within the past 10 years and are under 35 years of age, **went to Jordy Eduardo Padilla-Solis '15.** A senior engineer for Thornton Tomasetti in New York City, his focus is bridge design and rehabilitation. Padilla-Solis developed a passion for bridges during an internship for a local construction company that helped build New Haven's Pearl Harbor Memorial Bridge — also known as the "Q" bridge because it spans the Quinnipiac River. It was then that he realized the tremendous impact bridges have on communities. "I chose civil engineering because I wanted to be part of a team that could help transform cities," he said.

At Thornton Tomasetti, Padilla-Solis is currently immersed in work involving the Queensboro Bridge (also known as the 59th Street Bridge, made famous by the Simon and Garfunkel song).

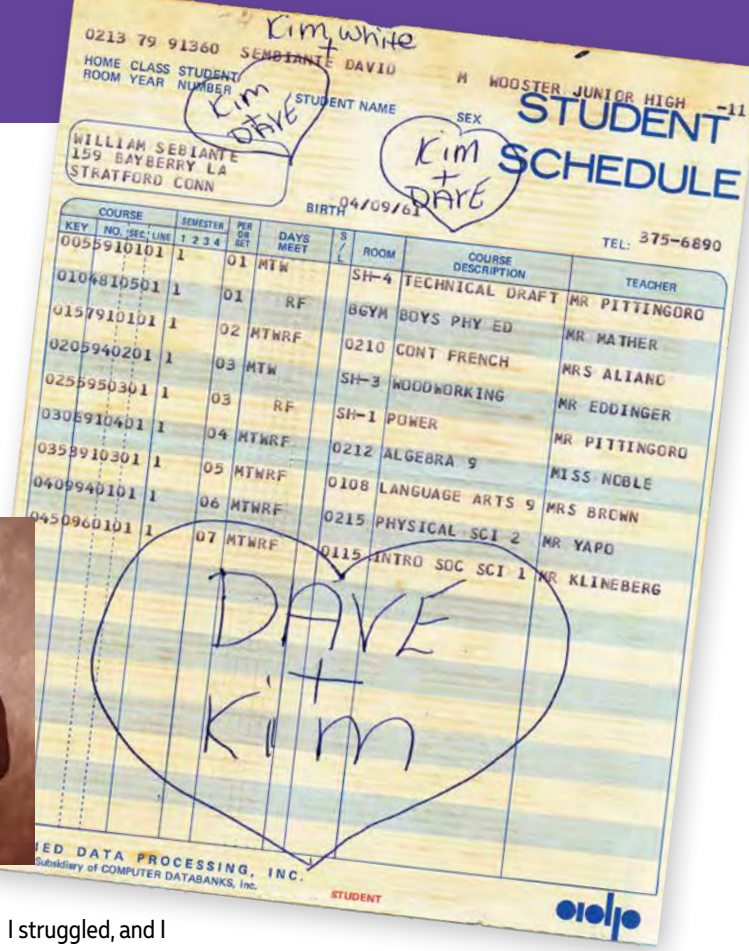
Over the past several years, he has been using a specialized concrete for bridge rehabilitation known as Ultra-High Performance Concrete (UHPC) and is pitching its various applications to several agencies and the Federal Highway Administration. UHPC's matrix is extremely dense, is self-compacting, and can eliminate the need for reinforcing steel in some applications. Its low permeability prevents the absorption of harmful materials such as chlorides, so it also affords superior durability.

Finally, the **Exemplary Partner Award went to the Tagliatela family,** whose unstinting support of the College has helped make it what it is today.

Board of Governors member Stephen Tagliatela '13 Hon, co-owner of Saybrook Point Resort and Marina in Old Saybrook, Connecticut, and co-owner of Franklin Construction LLC in New Haven, with family members Louis Tagliatela Jr. '17 and Patricia Tagliatela, says that seeing the work and achievements of students and graduates of the TCoE "strengthens our partnership with the University, particularly with the College of Engineering. It's like reinvesting in our community, and we want to give back to the community that has treated us so well."

The family has recently established the Tagliatela Family Endowed Chair in Civil Engineering, the Tagliatela Family Endowed Scholarship in Civil Engineering, and the Tagliatela Family Civil Engineering Laboratory. Said Louis Tagliatela, "It's amazing when you see the display of senior projects and meet the students and see what they've accomplished. The intern program that the students have is also so important, especially with Connecticut companies," he adds. "We want to keep that talent and those skills in Connecticut."

A Bequest. A Scholarship. A Story of High School Sweethearts.



David Sembiante graduated from the University of New Haven's College of Engineering in 1987 with a B.S. in Industrial Engineering and in 1999 with an M.S. in Computer & Information Science/Applications Software. Recently, he found himself contemplating his past and how he was able to become what he is today — happy, successful, and extraordinarily grateful.

A system simulator engineer for Pratt & Whitney for the past 18 years, Sembiante credits the University of New Haven for the training that qualified him to pursue a career in engineering. "Engineering is a very hard career and requires specific skills and ways of thinking that are necessary to make it in the work place," he said. "The University of New Haven provided the skills that were the price of admission for an engineering career.

"The ability to learn quickly and flexibly is a requirement for an engineer, especially at Pratt & Whitney," he continued. "I think the most valuable preparation that the University provided was that *I learned how to learn.* Concepts, methods, and paradigms of thinking change over time. I graduated with the foundation that enabled me to be nimble and deal with change."

Although the University of New Haven gave him the skills he needed for success, the inner confidence he needed in order to move forward came from another source — his wife and high school sweetheart, Kim, for whom he has named a scholarship that will be his bequest to the University. The Kim Sembiante Scholarship will help free the engineers of the future from the financial worries that could dog their steps for years. Because Sembiante and his wife both grew up in Stratford and attended the same high school there, the funds will be earmarked for graduates of a Stratford public high school who choose engineering at the University of New Haven.

Sembiante related how difficult his years as an undergraduate student were. "A first-generation college student, I had no idea what I was getting into. I struggled, and I found the financial worries daunting," he remembers. "Kim dealt with my struggles day to day. Without her love, I'm very sure my life would not have turned out as positively as it did. Her love made me feel that I mattered, and that changed the path of my life."

That path led to Sikorsky Aircraft for 18 years, when Sikorsky and Pratt & Whitney were both part of United Technologies. Sembiante was able to transition smoothly to Pratt & Whitney in 2005 before United Technologies sold Sikorsky to Lockheed Martin Corp. His work at Pratt & Whitney today entails building one-dimensional aero/thermo jet engine system simulations that tie all components — compressors, burners, turbines, control software, and more — into one desktop application that can run the simulation.

"Pratt & Whitney draws the very best from its engineers," said Sembiante. "It is really an engineer's paradise with respect to the engineering challenges and individual skills required to make a contribution on such a deep team of talent.

"When I found myself reflecting on how I got here and all the help I had along the way, I wanted to reach back and help someone the way others helped me."

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