

WINTER 2020

# NJIT

MAGAZINE

THE NEXT  
WAVE OF  
FACULTY  
RESEARCH  
AND  
TEACHING

A BLUEPRINT  
FOR THE  
FUTURE

## STREET SMARTS: THE RISE OF INTELLIGENT TRANSPORTATION

## A GLIMPSE INTO THE FUTURE

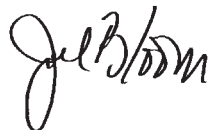
The onset of a new decade offers an excellent opportunity to reflect upon the accomplishments of the past and embrace the prospect of new innovations and research in the years to come. As New Jersey's public polytechnic university and as an R1 institution — the Carnegie Classification® for highest research activity — NJIT is uniquely adept at developing technological innovations with societal significance as well as market potential.

Transportation is vital to our society's proper functioning, providing for the mobility of people, goods and services. It enables people to access job markets and participate in recreational, cultural, educational and social activities. Additionally, it adds value to products by getting them to their destination for use. The transportation field also is a major contributor to the economy, as a consumer of resources and as a supplier of jobs. NJIT offers a Transportation Studies program for students whose goals are to become transportation planners, engineers and managers who can plan, design, operate and manage transportation systems capable of satisfying society's transportation needs. Our cover story illustrates how NJIT researchers are making exciting inroads into the future of this evolving field, from driverless cars to artificial intelligence.

Each year, scholars and teachers from the most select universities in the nation and the world join the faculty of NJIT. In this issue, we provide a snapshot of these new faculty members who are part of a community committed to excellence in scholarship, research and teaching.

Langan Engineering & Environmental Services Inc., a premier provider of integrated land development engineering and environmental consulting services with more than four decades of expertise around the world, was honored this year at NJIT's annual Celebration fundraising gala as NJIT's Outstanding Corporate Partner. In "A Blueprint for the Future," you will read about how the company, helmed by President and CEO David T. Gockel '81 — a member of NJIT's Board of Overseers — is poised for success due to a combination of technical excellence, practical experience and client responsiveness.

I hope you enjoy reading these articles and, as always, I welcome your feedback. ■





Joel S. Bloom

President

Matthew Golden

Chief Strategy Officer

Karen Hume

Executive Director of Publications and Creative Services

Christina Crovetto

Editor

Tanya Klein

Editorial Assistant

Julie Jacobs, Jesse Jenkins,

Evan Koblentz, Tracey L. Regan

Contributing Writers

Babette Hoyle

Production Manager

Diane Cuddy

Designer

Kenneth Alexo, Jr., Kevin D. Belfield,

Atam P. Dhawan, Craig Gotsman,

Louis Hamilton, Moshe Kam,

Branko Kolarevic, Michael K. Smullen,

Oya Tukul

Editorial Advisory Board

NJIT Magazine is published by New Jersey Institute of Technology, Office of Strategic Communications. Its mission is to foster ties with alumni, university friends and corporate partners and to report on relevant issues, particularly those in education, science, research and technology.

Please send letters of comment and requests to reproduce material from the magazine to:

NJIT Magazine

Office of Strategic Communications

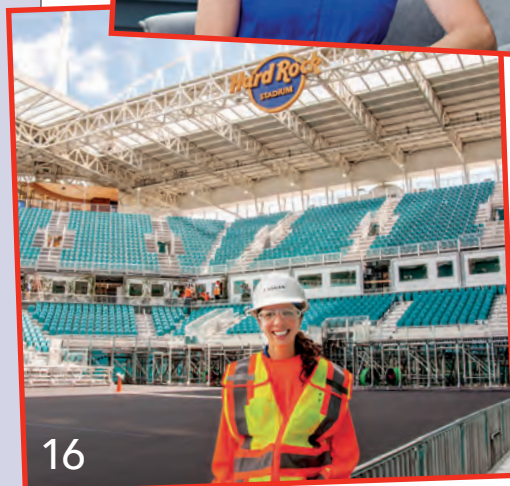
University Heights

Newark, NJ 07102-1982

crovetto@njit.edu

On the web:

[magazine.njit.edu](http://magazine.njit.edu)



## FEATURES

### Street Smarts: The Rise of Intelligent Transportation **8**

On NJIT's campus, civil, mechanical and electrical engineers, computer scientists, physicists and industrial designers are creating smarter cars and saner streets.

### The Next Wave of Faculty Research and Teaching **12**

Meet some of the newest members of the NJIT faculty.

### A Blueprint for the Future **16**

Helmed by David T. Gockel '81, Langan Engineering & Environmental Services Inc. provides an integrated mix of engineering and environmental consulting services in support of land development projects, corporate real estate portfolios and the energy industry.

## DEPARTMENTS

### Abstracts **2**

NJIT news in brief

### Point By Point **5**

Athletics update

### Giving **6**

NJIT development news

### Alumni Circuit **19**

Class notes and more

### In Conclusion **Inside Back Cover**

Leading-edge achievements by faculty, staff, students, alumni and friends of NJIT



(From left): Edward J. Bischof, Sr., senior vice president for finance and chief financial officer; Fadi P. Deek '85, '86, '97, provost and senior executive vice president, NJIT; Craig Gotsman, dean of Ying Wu College of Computing, NJIT; Joel S. Bloom, president, NJIT; Jordan Hu '89, founder/chief executive officer, RiskVal Financial Solutions, LLC and member of the NJIT Board of Trustees; and Andrew P. Christ P.E. '94, '01, senior vice president for real estate development and capital operations, NJIT.

## NJIT@JERSEY CITY OFFICIALLY LAUNCHED WITH EXPECTATION OF RAPID GROWTH

**N**JIT welcomed 35 data science students to its newly opened NJIT@JerseyCity location in the fall semester, with a goal of doubling that number in the spring and reaching 500 students in three years, Ying Wu College of Computing Dean Craig Gotsman said at the ribbon-cutting ceremony held December 5 at the new location.

Gotsman said the current students are primarily working professionals in the finance and tech industries from companies located in Jersey City and New York City. Hudson County quickly became a technology hub following the Sept. 11 attacks and was bolstered again after

Hurricane Sandy.

Currently NJIT@JerseyCity offers a master's degree in data science as well as graduate certificates in big data and data mining, with plans to add a graduate certificate in data visualization in spring 2020. Non-credit data science accelerator programs also are expected to be offered in the spring. All current students are studying part time, but Gotsman envisions the location will soon have options for full-time students.

Future plans also include graduate programs in cybersecurity.

NJIT@JerseyCity is located at 101 Hudson Street, just steps from the

Exchange Place PATH station. Gotsman said 80,000 commuters use the PATH daily, so there is plenty of potential for growth.

"I can almost promise that this site will bloom, it will flourish and it will grow exponentially," he said. "We're absolutely at the right place at the right time."

"You can't talk about computer science today and not realize how rapidly it is moving," President Joel S. Bloom added. "Campuses are going to continue to change and decentralize."

Board of Trustees member Jordan Hu '89 said the rapid changes echo what he witnessed as a computing professional working on Wall Street in the 1990s. At that time, merely knowing how to spell Unix would guarantee you a job, he joked, but today the key skill is understanding data science. Hu is the Founder and CEO of RiskVal Financial Solutions, LLC in New York City.

For more information on all NJIT@JerseyCity programs, please visit [jerseycity.njit.edu](http://jerseycity.njit.edu). ■

## NJIT-STRYKER ALUMNI CLUB HELPS HIGH SCHOOLS KICK OFF NEW SEASON OF FIRST ROBOTICS

The NJIT-Stryker Alumni Club helped local high schools kick off the new season of First Robotics on Jan. 4, 2020. First Robotics is a national organization that creates the requirements for robotic designs by high school teams that build a robot and compete against other regional high schools in a

challenge competition event. Stryker, a Fortune 500 medical devices and orthopaedic implants firm located in Mahwah, N.J., is now a Mid-Atlantic First Robotics regional sponsor. Stryker is funding and mentoring two New Jersey high school teams: International High





## NJIT Opens State-of-the-Art Nanoelectronics Fabrication Facility

It was with great fanfare that NJIT opened its newest research facility, the Microfabrication Innovation Center (MIC), where technologists will be able to create their own nano- and microelectronic sensors and microfluidic devices on campus.

"Faculty and students will be able to test, validate and translate innovative medical device and biosensor technologies to improve diagnosis and treatment of critical diseases and advance detection and remediation of pollutants," Atam Dhawan, senior vice provost for research, said at the ribbon-cutting in December.

In a tour of the facility, housed in the former Microelectronics Research Center, visitors walked through the series of rooms where researchers will print their designs on silicon or plates of glass, fabricate and test them. Because the parts they are making are micro- and nanoscale, the rooms will be free of potentially contaminating particles larger than a

micron. The highest-level cleanroom will be limited to 100 1-micron particles in a cubic meter of air.

Other devices that will take shape in the facility include powerful diagnostic sensor systems, including electrochemical DNA sensors, that are miniaturized down to the size of a single molecule and a device that uses on-chip electrochemical mass spectrometry to elucidate protein structures and determine protein quantities.

The ability to create their technologies on campus will spur researchers to pursue more ambitious projects, Lisa Axe, chair of the Department of Chemical and

Materials Engineering, remarked at the opening. Using outside R&D facilities for fabrication "hides work from other labs and colleagues" and prompts inventors to settle for "less risky designs" that do not need continuous monitoring.

Provost Fadi Deek noted, "This facility will also serve a critical educational purpose: It represents an investment in our future that will provide U.S. industries with a highly trained science and engineering workforce essential for remaining competitive in the area of medical devices, an important sector of our economy." ■



School in Paterson and Science Park High School in Newark. The NJIT-Stryker Alumni Club will be leading the effort.

"As alumni and as business professionals in the state of New Jersey, we want to give back," said Robert Cohen '83, '84, '87, vice president of Global Research and Development and chief technology officer for the Stryker Joint Replacement Division and Chair-Elect of the NJIT Board of Trustees. "We have a passion for mentoring students that have a STEM focus to their education. First Robotics high school

teams design and make robots where they put their knowledge to the test. Many of these students will contribute to future innovations and we are proud to be part of their journey."

"We at Stryker are excited about the opportunity to get involved with this program and to share our industry knowledge and experience with these students," said Ken Trimmer '92, '99, senior director of Engineering Standards at Stryker. "This is a great opportunity to give back to a community with the NJIT-Stryker Alumni Club taking the

lead." He added, "The First Robotics program has an aggressive schedule where students need to design and build a functioning robot in a relatively short period of time and be prepared to compete in a regional challenge event. The Stryker mentors are looking forward to working closely with the students on project management, design and fabrication. This is a very rewarding effort. The Club looks forward to an ongoing relationship with Science Park High School and working with these amazing students." ■



## NJIT'S CHRYSTOFF CAMACHO WINS AN EDISON PATENT AWARD FOR AN AERIAL REFORESTATION DEVICE

Chrystoff Camacho '17, an inventor and budding entrepreneur who developed an aerial reforestation device while he was an engineering technology student at NJIT, received a Thomas Alva Edison Patent Award from the Research & Development Council of New Jersey for his drone-deployed seed capsule.

Camacho's device, a biodegradable packet containing seeds and mineral-rich soil, is loaded into what looks like a tiny missile that is dropped from the air. With its cone tip, it is designed to perforate the ground to implant the capsule, but to also allow water to permeate in dry regions where the land is baked hard.

He says a trip to his native Guyana in his teens opened his eyes to the growing problem of landscape decimation caused by logging. That got him thinking — and researching rates of tree loss around the world.

"My first idea was about developing some way to make the land in need of rehabilitation more productive. Land stripped of trees becomes dry and flat and can't hold water, so I was thinking about making conical imprints that would create mini-basins for trees or crops that would be planted by hand," Camacho recounts. "But that got me thinking about ways to do this by air, using velocity to make the imprint, because doing it by hand is so time-consuming. And then I had the idea of including the seeds and soil."

In his patent application, Camacho argued that the current state of the art in aerial reforestation is "limited by lack of sufficient ground penetration

and difficulties with dispersal of larger seeds." His invention went on to win funding from NJIT, the National Science Foundation I-Corps program and private angel investors, as well as awards in technology contests.

With \$3,000 from the I-Corps program, Camacho and his team improved the prototype and sought out advice and customers through regional business accelerators. They caught the attention of tech entrepreneurs, prompting a \$30,000 infusion from an angel investor to develop a drone platform and business structure. This process led to the formation of an environmental technology firm, ParaTrees.

Like many startups, it also evolved into new ideas and markets. Most recently, the company is providing monitoring and evaluation services to forest managers, using a range of technologies such as unmanned aerial systems, IoT sensors and AI to assess forest conditions and recommend remediation.

Camacho said he was thrilled to "just be in the room with so many great, veteran inventors" at the Research & Development Council's 40th annual Thomas Alva Edison Patent Awards at Liberty Science Center. Among the 15 patent awardees were major corporations such as Celgene, Ethicon, Nokia Bell Labs and Siemens Corporate Technology.

"As a student at NJIT and young entrepreneur, I worked closely with university professors and advisers to push the envelope surrounding the startup community on campus," he said. "NJIT has always been a catalyst for innovation, and it's amazing to see the support that is being focused on student entrepreneurship with funding and training opportunities through campus programs like the Undergraduate Research and Innovation program, I-Corps and VentureLink, NJIT's business incubator." ■





## NJIT ATHLETICS ANNOUNCES 2020 HALL OF FAME INDUCTION CLASS

NJIT Athletics announced that the 2020 Hall of Fame Class will comprise 11 new members. The Annual Hall of Fame induction banquet will be held May 16, 2020 in NJIT's Wellness and Events Center.

The 2020 induction class will include: Kelly (Crowe) Ascolese '07 (Women's Basketball), Demond Cowins '04 (Men's Basketball), Bob English (Robert Swanson Recipient), Wycliffe Gordon '00 (Men's Volleyball), King Moy '74 (Herb M. Iris Recipient), John Rapsomanikis '68 (Men's Soccer), Erika Taugher '08, '09 M.S. (Women's Soccer), Steve Tice '00 (Baseball), Wayne Webb '58 (Men's Basketball), Sonia Zacher-Martini '88,

(Women's Volleyball), and the late Vincent Naimoli '62, '09 HON (Benefactor). This year's class marks the 19th in school history.

"I am so very happy to recognize these 11 outstanding individuals as the newest members of the Highlander Athletic Hall of Fame," said Lenny Kaplan, associate vice president/director of athletics. "This is a true embodiment of the history, tradition, excellence and progress of Highlander athletics. These individuals have set the standard by which we measure our success."

The NJIT Athletic Hall of Fame was founded in 1986 by then-director of

athletics J. Malcolm Simon in conjunction with the NJIT Alumni Association. The first class of inductees included multisport standout John Walsh '66, soccer All-American Hernan "Chico" Borja '81, beloved coach and professor Joseph M. Fitzgerald, and longtime Director of Athletics Robert Swanson. Simon, also the school's all-time winningest coach, was inducted upon his retirement as athletics director in 1994. In all, 44 individuals and three teams were honored through 1996. After a five-year hiatus, the Hall of Fame was revived in 2002 by Kaplan. When the Class of 2020 is welcomed, the Hall's membership will stand at 81. ■



## MEN'S SWIMMING AND DIVING REPEATS AS ECAC WINTER CHAMPIONS

For the second year in a row and the fourth time overall, the NJIT men's swimming and diving team earned the Eastern College Athletic Conference (ECAC) Winter Championship title.

The Highlanders wrapped up their latest championship performance at the Nassau County Aquatic Center, defeating second-place Fairfield by 236.5 points, 2038.5 to 1802.

Freshman Jake Nelms was named Men's Swimmer of the Meet, while NJIT head coach Ron Farina was named Men's Coach of the Meet.

Nelms made the most of his first ECAC Winter meet, picking up four medals (1 G, 2 S, 1 B) in his five events and helping NJIT's 800 Free Relay place in the top five.

In his second year with the Highlanders, Farina has led NJIT to back-to-back ECAC Winter crowns and won Coach of the Meet honors both times. ■

## A Celebration of Giving

**F**our distinguished individuals were recognized for achievements beneficial to the state and our nation, as was an organization exceptional for its commitment to NJIT's mission, at Celebration, NJIT's annual fundraiser for campuswide scholarship endowment funds. The event was held Nov. 8, 2019 at The Pleasantdale Chateau in West Orange, N.J.

Since its inception in 1995, Celebration has raised more than \$6 million in endowed scholarship funds, ensuring that top-quality higher education is accessible for talented, motivated students.

"Because of your support, NJIT students have the resources they need to not just succeed but thrive," said NJIT President Joel S. Bloom. "And their success translates into higher rankings and an enhanced reputation for NJIT."

Robert Medina '75, founder of Medina 43 Business Strategies, LLC, and Kim Vierheilg '99, vice president and New Jersey managing principal, AECOM, served as co-chairs of the event. The Spinners provided the evening's entertainment.

Along with raising funds, Celebration is an occasion to recognize important friends and alumni of the university. Demetrios J. Stamatis '85, president and chief executive officer of The Louis Berger Group, Inc., was awarded the President's Medal for Lifetime Achievement.

Marion T. Conway '70, '73 of Marion Conway Consulting received the Edward F. Weston Medal for Professional Achievement, given to an alumnus or alumna in recognition of outstanding professional and civic accomplishments, as well as support of the university.

Langan Engineering & Environmental Services Inc. received the Outstanding Corporate Partner Award. David T. Gockel '81, president and chief executive officer, accepted the award on the organization's behalf.



J. Robert Hillier '17 HON and Barbara A. Hillier of Studio Hillier were honored as Special Friends of the University.

At the event, Jeremy Bedient '21, a junior in Albert Dorman Honors College studying industrial engineering, underscored how scholarship support has enabled him to pursue his personal and professional dreams.

"None of our successes would be possible without your generosity," he said. "Because of you, I know that I'll be able to support my children's education one day, and hopefully follow your example of supporting future generations of Highlanders." ■

*TOP: (From left): J. Robert Hillier '17 HON and Barbara A. Hillier, Studio Hillier; Marion T. Conway '70, '73 of Marion Conway Consulting; David T. Gockel '81, president and CEO, Langan Engineering & Environmental Services Inc.; and NJIT Board of Trustees Member Demetrios J. Stamatis '85, president and CEO, The Louis Berger Group, Inc.*

*LEFT: Jeremy Bedient '21 was the student speaker at Celebration 2019.*

*RIGHT: Kim Vierheilg '99, vice president and New Jersey managing principal, AECOM, and Robert Medina '75, founder of Medina 43 Business Strategies, LLC, served as Executive Dinner Committee co-chairs.*



# YOUR GIFT WILL SUPPORT

cutting-edge STEM programs, groundbreaking research  
and the continued success of  
our hardworking students.



## YOUR DONATION ALSO WILL ASSIST

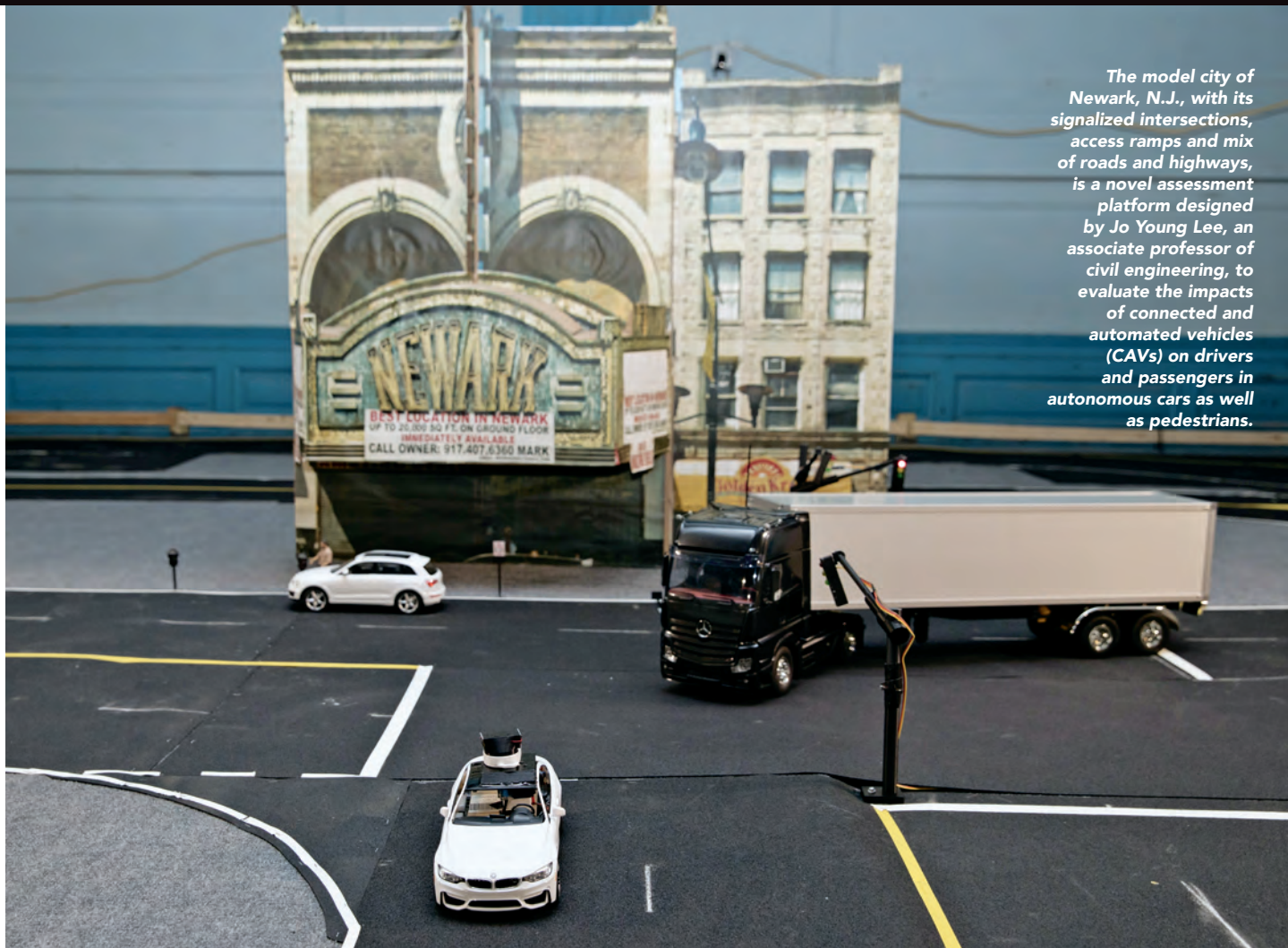
in moving NJIT further up in the  
national rankings.

**DONATE TODAY BY VISITING [njit.edu/givenow](https://njit.edu/givenow)**





# STREET



*The model city of Newark, N.J., with its signalized intersections, access ramps and mix of roads and highways, is a novel assessment platform designed by Jo Young Lee, an associate professor of civil engineering, to evaluate the impacts of connected and automated vehicles (CAVs) on drivers and passengers in autonomous cars as well as pedestrians.*

## The Rise of Intelligent Transportation

As cities boom, congestion builds. Traffic safety, air quality and productivity suffer.

Managing this growth, while mitigating its harm, is one of the central goals of the sustainability movement. On NJIT's campus, civil, mechanical and electrical engineers, computer scientists, physicists and industrial designers are attacking the problem from several angles. Their goal is to create smarter cars and saner streets with technologies that guide autonomous cars, optimize rideshare networks and defuse traffic jams.



# S - M - A - R - T - S :

## GUIDING AUTONOMOUS VEHICLES WITH INVISIBLE CUES

When an auto-piloted Tesla Model X collided with a truck in California in 2018, the crash alerted the public to an unsettling reality: the near-total absence of dynamic “smart signaling” in the nation’s transportation infrastructure. The car’s onboard computer, safety inspectors determined, failed to distinguish between the white paint of the truck and the brightly lit sky behind it.

A team of physics, information-security, robotics and built-environment researchers has proposed a solution: novel optical coatings, or tags, which would be invisible to the human eye, but convey instantaneous messaging about a car’s environment and objects within it in the form of reflected light.

While still scanning for visible information, an autonomous car would emit infrared light, comparable to flashes on a camera, that would be reflected back in a specific wavelength by the optical tags embedded in the environment. The car’s sensor would recognize the particular signals and be able to identify, for example, the type and location of the car that sent it.

“The tags can be used as coded information, like a QR code, but invisible, and provide more information because they can have multiple layers within them,” explained Mathew Schwartz, an assistant professor of industrial design, who is working with Jan Lagerwall and his team at the University of Luxembourg to identify a broad range of potential applications for their technology.

The tiny spherical shells of cholesteric liquid crystal, which would receive and reflect light in every direction, can be manufactured to reflect only certain wavelengths of light, such as infrared, and cancel out the ambient light so sensors only see the invisible tags.

## ARTIFICIAL INTELLIGENCE TAKES TO THE STREETS

With urban populations booming and the impact of congestion spiraling, computer scientists have joined engineers, physicists and industrial designers in a technology enhanced campaign against idling engines, fender benders and wasted time. Their principal tools are connected vehicles, intelligent sensor networks and smart mobile devices, and controllers capable of learning on the job to improve their performance. Prompting transportation signals to adjust dynamically to improve traffic flow is an early application.

“Now that we can collect traffic data with tools such as vehicular networks and smartphones to feed to artificial intelligence (AI), these systems are evolving from infant to adult. We expect to see the impact of intelligent devices throughout our transportation networks in reduced congestion and enhanced safety,” said

Guiling “Grace” Wang, a professor of computer science who specializes in both distributed systems and deep-learning algorithms. Here are two:

**Pinpointing Rider Demand:** In recent years, transportation companies have had a difficult time accurately predicting rider demand and thus struggle to optimize their resources — vehicles and drivers — to meet it. By fusing all related factors such as weather, time and conditions on the road, Wang and her collaborators aim to model the complex interactions among them through a learning device invented by the team known as a “deep spatio-temporal fuzzy neural network.”

**GPS Blackouts:** Wang has proposed a grid-based localization system in which cars with and without accurate GPS would be equipped with a wireless interface and self-organize into vehicle networks that would allow them to exchange location and distance information.

*NJIT engineering students are gutting toy trucks, SUVs, sedans and two-door Mini Coopers and refitting them with custom-designed systems: laser-cut side mirrors, wheels that can parallel park and a braking system that employs algorithms to control an electric motor, thus enabling soft and hard braking, idling and taxiing.*





## SHARING THE ROAD WITH DRIVERLESS CARS

Jo Young Lee, an associate professor of civil engineering, is working with Guiling “Grace” Wang, professor of computer science, and Cong Wang, an assistant professor of electrical and computer engineering, to develop a novel assessment platform that evaluates the impacts of connected and automated vehicles (CAVs) on drivers, passengers and pedestrians.

While the goal of CAV technology is to make driving safer and more efficient, there is still little information on human responses to these cars. Without understanding their sense of safety and comfort, as well as their physical reactions, such as steering and braking, it will be difficult to deploy them on the road.

Existing evaluations depend heavily on computer simulations, which can’t fully capture reactions. With backing from a National Science Foundation grant, the team is building a platform between a simulation and a street test that would use a crowdsourced cyber-physical reality that relies on visual and force feedback from human subjects to improve upon it. It would connect the human testers with miniature environments through virtual reality and measure their emotional responses, such as safety awareness and degree of comfort, and their behavioral reactions, such as steering maneuvers and their accelerating or decelerating activities.

“Integrating our platform with the development of CAV can create a positive feedback loop between design, development

and assessment of CAV, and thus enable its real on-road deployment,” Lee said. “We foresee the adoption of our platform has big impacts on transportation such as better intersection and highway design for the deployment of CAVs in the near future.”

## INTEGRATED CONNECTED URBAN CORRIDOR

NJIT and the City of Newark are collaborating on a project aimed at improving mobility, safety and air quality along congested urban routes. Called the Integrated Connected Urban Corridor (ICUC), the system would include state-of-the-art traffic detection, air pollution sensors and vehicle-to-infrastructure (V2I) communications along arterial roadways with traffic lights. The goal is to reduce





*Cong Wang, an assistant professor of electrical and computer engineering and a co-investigator of the project, views data collected by a vehicle feedback system – speed, LIDAR position, distance readings and camera feedback – which appears on the main display screen at a gaming-style steering wheel and pedal control stations, where remote drivers guide cars around the model city.*

## USHERING IN A CARBON-NEUTRAL ECONOMY WITH NEXT-GENERATION BATTERIES



The stakes for next-generation batteries that are high-capacity, long-lived and affordable could not be higher; the promise of a carbon-neutral economy depends on their success. While newer batteries can store 10 times as much energy as their graphite predecessors, they fade too quickly. The breakdown occurs at the interfaces between the polymers and the active materials that sustain electrochemical reactions; when these particles become electrically isolated, a battery's charging capacity and overall longevity are curtailed.

**Siva Nadimpalli**, the director of NJIT's Micro and Nano Mechanics Laboratory, uses novel techniques to reveal how battery electrodes break down in real time, rather than after they degrade. His custom-made cell enables electrochemical and stress measurements simultaneously and his thin-film electrodes – 10,000 times thinner than a human hair – capture real-time, uniform readings when a cell is running.

He aims to advance the development of multiphysics mathematical models, which capture a battery's mechanical behavior and the electrochemical activity of its electrodes, to predict how mechanical forces impact chemical reactions in battery materials, and to assess their corresponding electrical performance on, say, the current supplied by batteries at any voltage.

"If we can solve these problems, we will see new generations of battery-powered machines such as electric cars become commercially viable options," said Nadimpalli.

the number of congestion- and emissions-producing stops, vehicle idling and delays at traffic signals.

The system's devices would securely transmit traffic and air quality data, including traffic signal timing, to a cloud-based data analysis system developed by the ITS Resource Center, a research center at NJIT. The ICUC system would provide this traffic signal data and analytics to Newark's Division of Traffic and Signals, as well as to motorists, pedestrians and bicyclists, in real time. It could be used by the city to optimize traffic operation strategies, noted Branislav Dimitrijevic, a co-principal investigator on the project and professor of civil and environmental engineering, which is funded by the New Jersey Department of Transportation.

The ICUC pilot test bed is located in downtown Newark, along a 1.2-mile section of Raymond Boulevard and a 0.7-mile section of Warren Street, the 1st Street exit off I-280 and Newark Penn Station. It includes 13 signalized intersections that have been instrumented with devices enabling high-fidelity V2I communications.

Based on the preliminary estimates developed by the U.S. Department of Transportation, the connected vehicle applications enabled by ICUC alone have the potential to reduce crashes and fatalities by more than 5%, travel time in signalized corridors by 25% and vehicle emissions and fuel consumption by 10%. ■

*Author: Tracey L. Regan is an NJIT Magazine contributing writer.*

# The Next Wave of Faculty Research and Teaching

**E**ach year, scholars and teachers from the most select universities in the country join the faculty of NJIT. These faculty appointments build on the university's long tradition of fostering excellence in both research and teaching. Leveraging their unique skills and experience, each of these individuals is poised to have a significant impact on the NJIT community.

"We are excited to have another cohort of new faculty join us in each of our colleges and schools across campus," said Fadi P. Deek '85, '86, '97, provost and senior executive vice president at NJIT. "These outstanding scholars and dedicated teachers will make significant contributions to research and education that will strengthen our community and enhance our global impact."

Read more about these exceptional individuals and their accomplishments in the following pages.

## COLLEGE OF SCIENCE AND LIBERAL ARTS



**JULIE ANCIS**  
Professor of Humanities,  
Director of the  
Cyberpsychology Program  
(Fall, 2020)

Julie Ancis joins NJIT from the Georgia Institute of Technology, where she is associate vice president of Institute Diversity, responsible for advancing the university's goals around diversity, equity and collaboration. Prior to her current position, Ancis was a professor in the Department of Counseling and Psychological Services at Georgia State University, specializing in research on racial and gender attitudes, multicultural competence, the perceptions and experiences of diverse students on university campuses and women's legal experiences. She is a Fellow of the American Psychological Association.



**OMOWUNMI SADIK**  
Professor of Chemistry,  
Department Chair

Omowunmi Sadik comes to NJIT from the State University of New York at Binghamton (SUNY Binghamton), where she was a professor of chemistry and director of the Center for Research in Advanced Sensing Technologies & Environmental Sustainability. Her research areas include surface chemistry, sensors, energy and the environment, along with new measurement approaches and their application to solving problems in biological systems, including early diagnosis of cancer, DNA testing, detection of pain biomarkers and food safety. Her DNA sensor, for example, monitors cells continuously for mutations.





**FARNAZ SHAKIB**  
Assistant Professor,  
Chemistry

Farnaz Shakib comes to NJIT from the University of California, San Diego, where she was a postdoctoral research fellow in the Department of Chemistry and Biochemistry. A theoretical and computational chemist, she researches the dynamics of electrons and protons when exposed to sunlight, which is the basis of energy conversion reactions in photosynthesis, fuel and solar cells. Her theories describe these phenomena with the goal of designing green and sustainable “artificial photosynthesis” energy resources. Efficiency levels depend, she shows, on the coupled motion of protons and electrons acting upon each other.



**ZUOFENG SHANG**  
Associate Professor,  
Mathematics

Zuofeng Shang joins NJIT from Indiana University-Purdue University Indianapolis, where he was an assistant professor of statistics who integrated his discipline with data science and statistical machine learning. Shang focuses on various aspects of machine learning, including big data theory and deep learning theory; his work plays a central role in modern scalable algorithms and deep algorithms. Applications include the analysis of massive data, such as internet searches, social networks, mobile devices, satellites, genomics and medical scans. His methods aim for greater computational capability and efficiency.



**XIAONAN TAI**  
Assistant Professor,  
Biology (Fall, 2020)

Xiaonan Tai joins NJIT from the University of Utah, where she is a postdoctoral fellow at the Global Change

& Sustainability Center. She combines geospatial observations obtained from remote sensing and ground instruments with physics-based modeling to investigate ecosystems’ responses to global environmental change, including resistance to drought. Working with hydrologists, geologists, plant biologists and social scientists, Tai integrates plant hydraulics that characterizes water movement within plants and hydrological modeling that simulates water flow in the subsurface to examine a range of forest ecosystems, from montane aspen to riparian cottonwoods.



**JUNJIE YANG**  
Assistant Professor, Physics

Junjie Yang comes to NJIT from Central Michigan University, where he was an assistant professor of physics focused on the study of quantum materials. Quantum materials, in which the interactions between the constituent particles cannot be treated in a semiclassical manner, exhibit exotic electronic and magnetic properties such as multiferroics. The materials he explores exhibit ferroelectricity and magnetism simultaneously. They have potential for use in actuators, switches and magnetic field sensors, as well as applications in ultralow energy and ultrafast data storage technologies.

## **J. ROBERT AND BARBARA A. HILLIER COLLEGE OF ARCHITECTURE AND DESIGN**



**HYOJIN KIM**  
Associate Professor,  
Architecture

Hyojin Kim joins NJIT from the Catholic University of America, where she was an assistant professor in the School of Architecture and Planning. Kim focuses on energy efficiency and indoor environmental quality (IEQ) in next-generation buildings, striving to find a balance between the two,

as IEQ can impact occupants’ comfort and well-being. Working with the National Institute of Standards and Technology, Samsung Electronics and others, she develops statistical and graphical methods for evaluating low-energy building systems and technologies in terms of their energy efficiency and IEQ performance.



**VERA PARLAC**  
Associate Professor,  
Architecture

Vera Parlac comes to NJIT from the University of Calgary, where she was an assistant professor of architecture and founding director of the Laboratory for Integrative Design. She explores the intersections of architecture and biology, materials science, soft robotics, computation and digital fabrication. Parlac currently focuses on the integration of responsive materials, such as shape memory alloys, and inflatable pneumatic actuators into architectural assemblies that adapt through sensing and movement to external and internal influences such as changes in temperature, light levels and human movement.

## **NEWARK COLLEGE OF ENGINEERING**



**FATEMEH  
AHMADPOOR**  
Assistant Professor,  
Mechanical and Industrial  
Engineering

Fatemeh Ahmadpoor joins NJIT from Brown University, where she was a postdoctoral research associate in the School of Engineering. She studies the enhanced electromechanical properties of cellular membranes, with applications in biological phenomena such as hearing mechanisms and ion-channel activation and thermal fluctuations and entropic effects on the mechanical properties of two-dimensional materials. Her research

on entropic effects — the impact that thermal fluctuations have on overall material behavior — and the interaction of nanomaterials with biological systems has applications in drug delivery systems and the potential toxicity of nanomaterials.



**SAMANEH FAROKHIRAD**  
Assistant Professor,  
Mechanical and Industrial  
Engineering

Samaneh Farokhirad comes to NJIT from the University of Pennsylvania, where she was a postdoctoral research fellow in the Department of Chemical and Biomolecular Engineering and the Penn Institute for Computational Science. Among other areas, she researches complex fluids and soft matter, including multiphase flows that can include a mixture of liquids, gases and solids, for example, and biologically active matters such as bacterial cells and cellular tissues. She develops multiscale modeling and novel simulation methods for designing deformable nanoparticles for targeted drug delivery and diagnostic applications.



**JONATHAN GRASMAN**  
Assistant Professor,  
Biomedical Engineering

Jonathan Grasman joins NJIT from Tufts University, where he was a postdoctoral fellow in biomedical engineering. He develops tissue models to understand how nerves grow into repairing tissues and to study soft tissue reconstruction, with an emphasis on understanding cell-biomaterial interactions. He seeks to develop mechanisms to repair large volumetric muscle loss by identifying relationships between blood vessels and axons to better regenerate skeletal muscle tissue. His biopolymer-based tissues generate neurovascular and skeletal muscle tissue mimetics to enhance regeneration and innervation related to traumatic injury, neuropathy or genetic disorders.



**WILLIAM H. PENNOCK**  
Assistant Professor,  
Civil and Environmental  
Engineering (Fall, 2020)

William H. Pennock comes to NJIT from Cornell University, where he is a National Science Foundation Graduate Research Fellow in environmental engineering. Within Cornell's AguaClara Program, he focuses on expanding municipal drinking water treatment globally by improving gravity-powered technology, free of electricity and moving parts, and studying the fluid mechanics and chemistry governing coagulation, which is an upstream process for most treatment. On a Fulbright-Nehru Program this year in India, he is working on the development, dissemination and adoption of a new modular, village-scale drinking water treatment plant.



**JOSHUA YOUNG**  
Assistant Professor,  
Chemical and Materials  
Engineering

Joshua Young joins NJIT from SUNY Binghamton, where he was a postdoctoral research fellow in the Department of Physics. He uses computational methods to explore and design two-dimensional materials, complex oxides and liquid electrolytes for energy and electronics applications, including batteries, photovoltaics and memory devices. He primarily uses quantum mechanics-based computational methods to predict the structure and properties of as-yet-unsynthesized materials for a variety of applications. Young generates large data sets and employs machine-learning algorithms to link atomic-scale structural features to the properties of interest.

## MARTIN TUCHMAN SCHOOL OF MANAGEMENT



**AICHIH (JASMINE) CHANG**  
Assistant Professor,  
Business Data Science

Aichih (Jasmine) Chang comes to NJIT from Rutgers

Business School at Rutgers University, where she completed a Ph.D. in supply chain management. She also has an MBA in finance and supply chain management from Rutgers. Chang engages in data-focused research in diverse sectors: maximizing service quality in hospital operations; identifying efficiencies in the coffee bean supply chain in developing countries to improve farmers' livelihoods; text analytics of financial news designed to generate insights into investments; and the use of blockchain technology to improve supply chain performance.



**ALBERTO MARTÍN-UTRERA**  
Assistant Professor, Finance

Alberto Martín-Utrera joins NJIT from Lancaster University, where he was a lecturer of finance. He earned a Ph.D. at Universidad Carlos III de Madrid. His research lies at the interface of asset pricing and machine learning, with a focus on investments and portfolio optimization. Martín-Utrera employs machine-learning techniques to construct investment strategies, including the development of investment portfolio strategies that consider real-world frictions such as transaction costs, which are normally disregarded in empirical asset pricing models, but are of interest to investors and financial institutions.



## YING WU COLLEGE OF COMPUTING



**DAVID A. BADER**  
Distinguished Professor,  
Computer Science

David A. Bader comes to NJIT from the Georgia Institute of Technology, where he was a professor and chair of the School of Computational Science and Engineering, a multidisciplinary school he founded. His interests lie at the intersection of data science and high-performance computing, with applications in cybersecurity, massive-scale analytics and computational genomics. He has served as the lead scientist in such DARPA programs as High Productivity Computing Systems in collaboration with IBM and is an adviser to the White House on the National Strategic Computing Initiative.



**CODY BUNTAIN**  
Assistant Professor,  
Informatics

Cody Buntain joins NJIT from New York University, where he was a postdoctoral research fellow at the Social Media and Political Participation Lab. He applies large-scale analysis to study social media and the larger information ecosystem, focusing on how individuals engage socially and politically and respond to crises and disasters in online spaces. Working with political scientists, he tracks online foreign election interference in U.S. elections, develops techniques to detect this interference across online social platforms and devises information retrieval methods for rapid searches across these platforms.



**JACOB CHAKARESKI**  
Associate Professor,  
Informatics

Jacob Chakareski comes to NJIT from the University of Alabama, where he

was an assistant professor of electrical and computer engineering. He seeks to enable ubiquitous networked immersion, akin to virtual human teleportation, to assist with societal challenges in areas such as remote sensing, search and rescue and telecommuting. He develops novel methods to integrate nontraditional emerging wireless technologies, such as free-space-optics and millimeter waves that transmit data using very high electromagnetic wave frequencies, to enable the ultrahigh data rates and ultra-low latencies required by next-generation VR/AR applications.



**SALAM DAHER**  
Assistant Professor,  
Informatics

Salam Daher joins NJIT from the University of Central Florida, where she was a postdoctoral researcher at the Synthetic Reality Lab focusing on the use of augmented reality (AR) in health care simulation. Daher uses AR to combine virtual content with the real world, such as 3D modeling of humans in synthetic environments. Her Physical-Virtual Patients, for example, allow health care educators to experience real-time cues such as temperature, pulse, speech, heart sounds, facial expressions and changes in appearance, as in skin color and wounds in simulated patients.



**PRZEMYSŁAW MUSIALSKI**  
Associate Professor,  
Computer Science

Przemyslaw Musialski comes to NJIT from the Vienna University of Technology in Austria, where he headed the computational fabrication group at the Center for Geometry and Computational Design and was a university assistant at the Institute of Discrete Mathematics and Geometry. He researches computer graphics and computational fabrication, developing a framework for shape optimization that takes into account

physical properties of the fabricated product, such as structural strength. He seeks to enable designers to create new products directly on the computer, averting the need to manufacture preliminary prototypes.



**TOMER WEISS**  
Assistant Professor,  
Informatics

Tomer Weiss comes to NJIT from the Computer Graphics and Vision

Laboratory at the University of California, Los Angeles, where he finished his doctoral studies in 2018. Broadly, he is interested in visual computing, including the virtual simulation of physically embodied AI agents and algorithmic content creation for virtual, augmented and other immersive reality media. He recently developed software for automatically furnishing interior spaces, which recommends, places and visualizes furniture arrangements in a room. Before becoming an academic, he held research scientist positions at Amazon and Autodesk Research.



**PAN XU**  
Assistant Professor,  
Computer Science

Pan Xu comes to NJIT from the University of Maryland, where he completed a Ph.D.

in computer science. He also has a Ph.D. from Iowa State University in operations research, an interdisciplinary field that uses mathematical techniques to solve large-scale optimization problems in the real world. He focuses on problems featuring uncertain inputs that arise in e-commerce, internet advertising, crowdsourcing markets, data mining, databases and revenue management, such as online allocation policy for real-time matching markets, including crowdsourcing markets such as Amazon Mechanical Turk that match workers and tasks.

*Author: Tracey L. Regan is an NJIT Magazine contributing writer.*

NJIT visit with President Joel S. Bloom



PHOTO: LANGAN

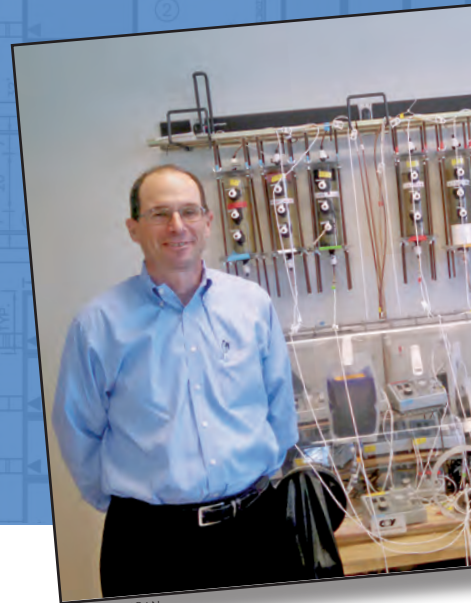


PHOTO: LANGAN

**"NJIT GRADUATES ARE  
HIGHLY INTELLIGENT,  
INNOVATIVE AND  
MOTIVATED. THEY'VE  
CERTAINLY HAD A  
TREMENDOUS IMPACT  
ON OUR SUCCESS."**

- David T. Gockel '81,  
President and CEO  
**LANGAN**

# A Blueprint

Founded in 1970, Langan Environmental & Engineering Services Inc., based in Parsippany, N.J., provides integrated land development engineering and environmental consulting services for clients around the world. Over 1,200 professionals — many of whom are graduates of NJIT — work in 30 offices delivering a wide range of services to developers, corporations, property owners, energy companies and public sector clients.

The firm has a long history of partnerships with NJIT that include student internships and co-op opportunities, as well as full-

time employment. In 2017, Langan was named "Continuous Engagement Partner" by NJIT's Career Development Services, and has been a recruiting partner with NJIT since the 1980s. More than 60 NJIT alumni are employed across all levels at Langan, including David T. Gockel '81, president and CEO.

"Langan's relationship with NJIT goes back 50 years to the founding of our firm, when Langan hired an NCE grad," said Gockel, who is a member of NJIT's Board of Overseers. "We have always depended



PHOTO: LANGAN

Crystal Eggers '03, senior project manager, Langan, and co-chair of the Langan Alumni Corporate Club, plays a hands-on role in renewable energy development, applying her site/civil engineering expertise on numerous ground-mounted solar array projects throughout the Northeast.



PHOTO: CYPRESS CREEK RENEWABLES (CCR)





Langan's Stewart Abrams and NJIT's Michel Boufadel perform treatability studies with graduate students at NJIT's Center for Natural Resources Laboratories.

Claudia Correa '06, senior project manager, Langan, was on point with site/civil engineering in support of a 17-ton canopy addition to Hard Rock Stadium in Miami, which hosted this year's Super Bowl.

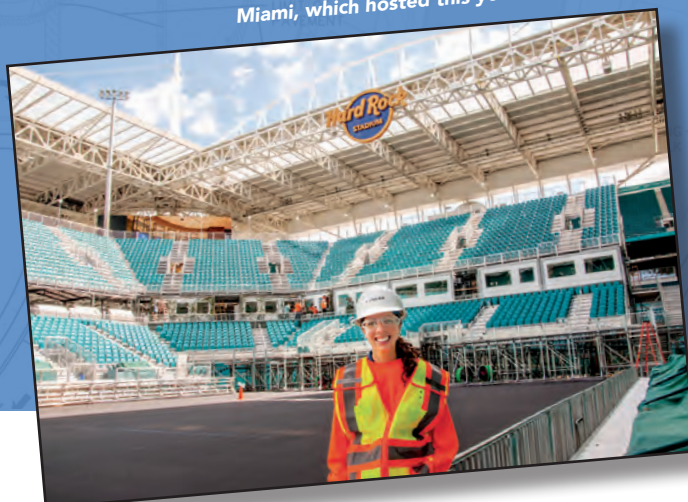


PHOTO: LANGAN

# for the Future

on NJIT for some of the best and brightest engineers and scientists to join Langan, and many have risen to the ranks of senior leadership. NJIT graduates are highly intelligent, innovative and motivated. They've certainly had a tremendous impact on our success."

Langan collaborates with NJIT on a variety of initiatives, from recruiting to lab studies, including treatability studies at the Center for Natural Resources Development and Protection. These studies provide essential information for designing

innovative, practical and cost-effective remediation systems. In turn, opportunities for student engagement and joint research are generated by this partnership.

"NJIT's relationship with Langan has been mutually beneficial on a number of fronts," noted NJIT President Joel S. Bloom. "In addition to working on several environmental studies for our university, Langan has played a significant role in cultivating the talents of NJIT students through joint research, internships and the hiring of many NJIT graduates."

Additionally, Langan also proudly hosts an NJIT corporate alumni club. These clubs provide a valuable networking opportunity for alumni within the workplace while also assisting NJIT students and faculty.

In November 2019, at its annual Celebration gala, NJIT named Langan its "Outstanding Corporate Partner." The award recognizes a corporation that is a major benefactor of the university, engaged with the university through board participation and involved in other various collaborative activities. ■



2-Megawatt/16-Acre Solar Field, Sandy Creek, N.Y. – Part of the New York State Community Solar Program.



PHOTO: LANGAN

Matt Koch '07, senior project manager, Langan, provided geotechnical engineering at the recently opened American Dream, a 3 million-square-foot entertainment and retail complex in the N.J. Meadowlands.

# INVESTING IN THE FUTURE



Raymond F. Carulli '73 is like so many other NCE students of his generation – hardworking, dedicated and driven. A first-generation college student from modest means, Ray went to NCE at night for five years so he could work full time during the day to pay his way through school. The rigors of work and school were grueling, but the faculty were supportive of Ray, a kindness he never forgot.

With his degree in hand, Ray became a registered Professional Engineer, and ultimately owned and operated a number of businesses in a variety of industries. He is grateful to NJIT for the role it played in his success.

To make sure others have the opportunity to pursue a degree at NJIT, Ray has created the *Raymond F. Carulli '73 Scholarship* with a gift through his estate. In making this gift to NJIT, Ray pays tribute to his lifelong friend, Ann Bernadette Nolan.

**“I made this gift and any to come in memory of Ann Bernadette Nolan (1932 - 2018). She was as instrumental to my success as was NCE, and would be so proud of me for what I am giving, and to whom I am giving it.”** - *Raymond Carulli '73*

To learn more about Ray, his tribute to friend Ann Bernadette and the *Raymond F. Carulli '73 Scholarship*, please visit NJIT's planned giving website at <https://njit.giftplans.org/>.

**For information on creating a legacy at NJIT through your estate plans, please contact us today.**

**Beth Kornstein**

Associate Vice President of Planned Giving

973-596-8548

[elizabeth.s.kornstein@njit.edu](mailto:elizabeth.s.kornstein@njit.edu)





## MAL & FRIENDS

*NJIT Magazine* invites new correspondents to join Mal Simon in sharing news about class members and alumni organizations. Professor emeritus of physical education and athletics, Mal was director of physical education and athletics, and men's soccer coach, for 30 years. In 1993, he received the Cullimore Medal for his service to the university.

If you would like to be a regular correspondent, don't hesitate to send an email to the editor of *NJIT Magazine*: [crovetto@njit.edu](mailto:crovetto@njit.edu)

First, the latest news from Mal –



## John Walsh: A Man for All Seasons

England had its Sir Thomas More, NCE had its John Walsh '66.

It is befitting to use this epithet in describing John, as his accomplishments are many and widely ranging, from scholar to athlete to businessperson to family/community member. I am dedicating this column in tribute to John upon his passing on Sept. 18, 2019, from complications of cardiac amyloidosis.

John graduated from Seton Hall Preparatory School in 1962, as one of the tops in his class academically and a star baseball player, and then came to NCE. In 1966, John graduated magna cum laude with a Bachelor of Science in electrical engineering and as a member of Tau Beta Pi, the national engineering honor society. At NCE, John, while earning good grades across the board, was remembered as that rare student who was good at, and actually enjoyed, all courses in the Department of English and Humanities and was always quick to help a classmate with their vocabulary or grammar, even when not asked. John blamed his Catholic prep school background for this annoying quality. Engineering graphics was the exact opposite for John — “not good at it and don't like it” — he would say, “If this is engineering, I'm in the wrong place.” Fortunately, John was in the right place. From NCE, he went to graduate school at Rutgers and a part-time job at Sarnoff Labs in Princeton, secured with the help of older brother Tom, a Ph.D. working at Sarnoff. At Sarnoff, John was involved in cutting-edge research which could have facilitated a Ph.D. pursuit at Rutgers, but he opted for a master's degree in electrical engineering and a job at IBM.

I recruited John in his junior year at NCE to play soccer goalie when my goalie, Manuel Garrido '65, had a season-ending injury during a preseason game at West Point. I was walking through the



LEFT: John Walsh at Seton Hall Prep. He is standing second from right.  
RIGHT: John Walsh's 1966 yearbook photo.

## A L U M N I C I R C U I T



*The 1966 basketball team.  
John Walsh is #15 in the front row.*

gym the Monday after the West Point game when I saw John shooting baskets. I figured he would fit the bill perfectly because he had played JV basketball for me in his freshman year so I knew he was fast and could jump, played baseball which meant he could catch, and lived in Kearny, a hotbed of soccer, which meant he had to know the game. I didn't sugarcoat my need and said, "John, Manny had his ribs broken in the West Point scrimmage and is out for the year, so I need a goalie, how about you?" God bless him because he said yes and ended up being our goalie for two seasons, setting a school record with six shutouts in his first season, and being elected co-captain as a senior. Paul Tubbs '66, a senior teammate, wrote that "John was a memorable mentor to me and, most likely, to others who knew him athletically and academically. It was wonderful to see him step into the goalie position when Manny was injured. John quickly learned and managed this position, becoming a significant contributor to the soccer team."

I had the pleasure of meeting John again, about five years ago, when he and his wife passed through Tennessee, en route to Georgia. His sad passing

has happened far too soon. May God bless John's soul and grant peace and understanding to all those who knew and loved him."

John also played four years on the varsity basketball team for Coach Joe Fitzgerald. He was a starter on the 1965 team that won national honors as the top defensive team in the National Association of Intercollegiate Athletics. As a senior, John was voted team co-captain, was the leading scorer and was selected by the New Jersey college basketball coaches to the New Jersey College All-State First Team. Due to John's offensive ability and the effort it entailed, Coach Fitzgerald

would always make sure that John guarded the weakest offensive threat on the opposition. This would typically allow John to come up with a couple of easy steals or interceptions during a game. John loved when, in the presence of teammates, a classmate who had seen the game would compliment John on his "great defense" because of those steals or interceptions. His teammates could only roll their eyes as John smiled and said thanks while the actual defensive standouts went unmentioned. Skip Wilkins '64, one of his teammates, told me of a humorous incident that took place during a game with Upsala College: "During the last couple of minutes, I was dribbling down the side of the court, passing by John and intending to go all the way when somehow John had the ball and I was left with a defender. John probably thought he had a better plan ... a clean steal from your own teammate. We laughed a lot about it afterwards. John was a fun guy, up for anything, but always had a way of keeping things in the right perspective."

John also played four years of baseball for Paul Hauser as an outfielder. In his senior year, he was voted team co-captain



*The 1966 baseball team. John Walsh is pictured in the front row next to Coach Paul Hauser.*



by the team. In 1966, with outstanding performances in three sports, John was selected as NCE Senior Athlete of the Year. Hank Dobbelaar '66 put it succinctly when he said, "John was a three-sport athlete as well as an honor student when it was unheard of at NCE where the engineering curriculum was a test to even the best academics. I consider it an honor to have played alongside John for all four years on the baseball team. He was a true leader, motivated scholar, dynamic athlete and most of all a wonderful teammate." To cap all of this, John was one of the initial inductees into the NJIT Athletic Hall of Fame in 1986.

After graduating from Rutgers, John began work at IBM. Later, he was recruited by AT&T and eventually went on to work for several high-tech startups. Inevitably, the references and referrals from this work translated into select, discretionary consulting engagements. John had a successful and rewarding business career and through the years was diligent in maintaining relationships with an ever-growing number of friends from his business past.

Despite his scholarship, athletic and business pursuits, John's priority was still family. He grew up in Kearny with an older sister, Pat, and older brother, Tom, in a multifamily house with aunts, uncles and cousins, which was the center of his family life through college. As his professional life came to require residence on the West Coast, John was adamant about making frequent trips east to join in family events with the ever-growing family, including nieces and nephews. He was always close to Pat, providing critical support — "whatever was needed, my 'go-to guy'" — especially during trying times. She credits John with saving her life. "UJ" as they called him, was a positive father figure for Pat's three daughters growing up. John would joke that he commanded significant fealty and deference from the next generations in the family because



behind his back he was known as "rich Uncle John," while nothing was further from the truth.

At IBM, John met Dick Keelty and Jeff Szem, who would become lifelong friends. Initially, they played in some local recreational basketball leagues, bringing Dick's older brother, George, into the mix. But it would be golf that provided the vehicle for this enduring friendship. In 1972, the four took their first weeklong golf trip together. This annual golf trip became a permanent addition to the calendars of all four with the trip evolving into the full-blown, golfing, drinking, card-playing, wagering, cigar-smoking bash that they all loved. Their last trip took place in 2019. In 1980, the four added a second annual golf week to their calendars, played in New Jersey and centered around an annual June fundraising memorial golf tournament established by the Keeltys. John would always pack his week with visits to family and friends around the golf activities. In 2013, John added another regular event to that week, related to his days at Seton Hall Prep.

In 2012, John attended his Seton Hall Prep 50th reunion and reunited with an old friend, Gary Gumbrecht. They had been friends in high school and had started at NCE together. At the reunion in 2012, Gary and John met friends they

*John Walsh (far right) with his brother Tom and sister Pat.*

had been close with in high school but had lost track of. In 2013, this group of eight decided to get together again and Gary hosted them for a dinner at his New York City apartment. That event convinced them all to make it an annual event, hosted by Gary and timed to coincide with John's New Jersey golf trip in June. Their last dinner was in 2019.

In 2002, I started a golf event for soccer players that I had coached at NCE/NJIT. John was visiting from California, and since he was staying with Rich Schroeder, asked if he could bring him. I took some good-natured ribbing about allowing a basketball player to defile their soccer event and it was a fun day for all, but it also gave me the idea to include basketball alumni of the same vintage as my soccer players in the event for a little additional competition. And so, thanks to John's invitation, was born the annual "Mal Simon Hands & Feet Golf Tournament" played in alternate years at the Lake Mohawk golf course of Roy Knutsen '62 and the Newton course of Bob Welgos '62. It was a fun event for many alumni, especially John who, being one of the better golfers, delighted in asking for bids for his participation as a soccer or basketball team member.

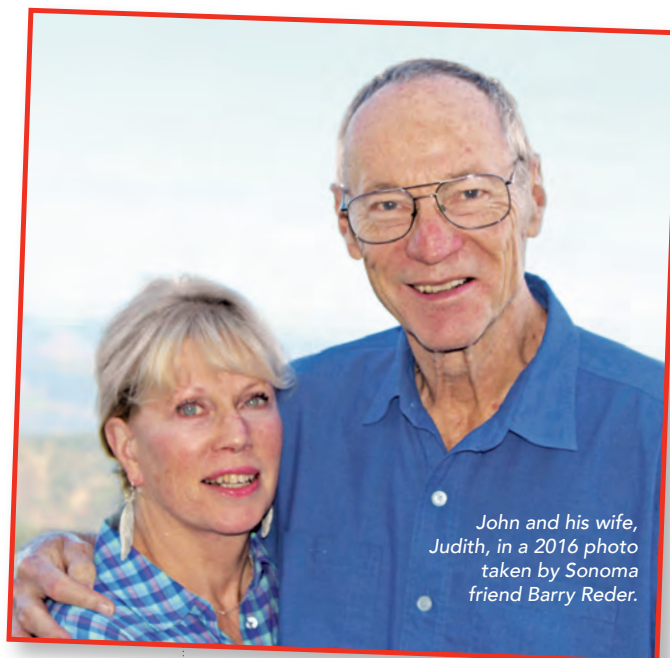
With all his successes, John would tell you that his most significant accomplishment was convincing his best friend, Judith Walsh, to marry him. (See *NJIT Magazine*, Fall 2005, page 23.) They were married May 12, 2005 in Napa, Calif. Following a California celebration with West Coast friends and Judith's family, they traveled to New Jersey where they celebrated with East Coast friends and John's family at the home of Rich and Lynne Schroeder in Montclair, N.J. John and Judith resided in a home they had custom-built in the hills overlooking the town of Sonoma, Calif. As usual, John was active within his local community. A neighbor, Barry Reder, recalled "John invested hundreds of hours in his role as president of the Diamond A Neighborhood Association while Judith put in countless hours working

with multiple Sonoma nonprofits in various roles while also helping to make Diamond A the welcoming community it is. We were so fortunate to have them as such active members of our community up here on the hill. Speaking very personally, I will miss his good humor, wisdom and old-fashioned common sense."

John was also an active NJIT alumnus. He attended the 50th reunion celebration for his graduating class during Alumni Weekend in 2016 and the Wellness and Events Center opening in 2017. He was a host and regular participant in West Coast alumni events, a regular donor and an attendee for alumni basketball events

when his travels allowed. John and Judith had a busy, active life in California but always had the time for friends from John's NCE days. My wife, Diane, and I visited with them twice during our trips to California. On one trip we stayed at their beautiful mountainside home in Portola Valley and, on another trip, John gave us an all-day tour of San Francisco

*Friends for Life: John Walsh and his lifelong friends, George Keelty, Jeff Szem and Dick Keelty.*



*John and his wife, Judith, in a 2016 photo taken by Sonoma friend Barry Reder.*

and its surroundings. John and Judith hosted NJIT alumni events that included Joel Bloom, NJIT president, and his wife, Diane, at their home in Sonoma. President Bloom stated that "John was a great friend to the university and would always make time to visit NJIT when he was in the area, keeping himself up to date on what was happening at his alma mater. Indeed, he was a model NCE alumnus — organizing and hosting events for alumni in Northern California. He and his loving wife generously supported our students, especially our hardworking and high-achieving scholar-athletes. The NJIT community mourns John's passing and extends its deepest sympathy to his wife and family. He will be missed."

Finally, I want to acknowledge and thank the many friends and family members whose contributions allowed me to write this column. For me, it may be the volume, emotion and humor of this outpouring of friends and family that provided the most fitting tribute to John — a man for all seasons. ■



While meandering through my early NCE records, I came upon the program that 99 of the 494 members of the 1960 NCE graduating class will remember. It was June 5, 1960, when the popular PHT (Pushed Him Through) degrees were awarded to 99 wives in a packed Weston Hall Auditorium. I was adviser to this class, which was led by class president Michael Cafone. Mike, Phil Bloom and George Tikijian organized the affair. Dr. Edward Molina (affectionately called General) was guest speaker and Bernard Finver gave a tribute titled, "What Is a College Wife." I would love to hear from any in the 1960 class (or other years) whose wives received this degree. You can contact me at [mal.simon@njit.edu](mailto:mal.simon@njit.edu).



# **A TOP 100 National University**

***- U.S. News & World Report***

# That Time When an NJIT Graduate Designed the Most Beautiful Buildings in Washington, DC



Turkish  
Ambassador's  
Residence,  
Washington, DC

**W**ell, no, not quite. He — they were all “he” then — technically graduated from Newark Technical School. But it counts.

His name was Maj. George Oakley Totten, Jr. He was born in New York City on Dec. 5, 1866, to George Oakley and Mary Elizabeth (Styles) Totten. George’s family had a long history in New York; his ancestors fought in the American Revolution and his great-grandfather founded Tottenville in Staten Island. George’s father (“senior” to his “junior”) was a New York-based businessman who became a chief real estate investor in Newark.

George was born by coincidence in the same year as Newark’s bicentennial. Founded in 1666 by conservative Puritans, the city was undergoing an enormous expansion. Trade boards, hospitals, schools and group homes were constructed at extraordinary speed as the population grew exponentially. As Allan Cullimore, NCE’s President from 1920 to 1949, wrote in his history of the

college, “[Newark] was the home of what was, in the middle of the last century, probably the most highly-industrialized center in the United States. She recognized that to retain her position of eminence she must have ways and means of developing men who would carry on what might be called the ‘industrial tradition.’” To educate the citizens who would carry on this work, especially the engineers and architects, the city chartered in 1881 the Newark Technical School.

Although the exact dates are murky, George enrolled at NTS sometime between 1882 and 1883, and graduated between 1884 and 1886, after which he graduated from Columbia University with a Ph.B in 1891 and an A.M. in 1892. He was awarded a prestigious fellowship, and for the next two years studied in France at the Ecole des Beaux Arts and Atelier Daumet-Esquie.

Upon his return to the United States and in 1896, he was appointed chief designer in the Office of the Supervising Architect, Department of the Treasury, which inspired him to establish his own firm, Totten & Rogers, founded with his college roommate.

By 1908, George had designed the American chancery in Turkey, and a private residence for Prime Minister Issez Pasha. The Turkish Sultan, Abdul Hamid, admired George’s work so much that he asked him to

serve as his private architect, which he apparently accepted. Before he took the position, the Sultan was overthrown.

George’s interest in diplomatic residences was piqued, and he found the sponsorship of Mary Foote Henderson, a wealthy Washington socialite and suffragette who sought to develop the Meridian Hill area into a center for the city’s elite ambassador corps. With her backing, George built more than a dozen residences in the area, including the residences of Turkish, Polish, Belgian, Norwegian, Spanish, Swedish and Danish legations, and the former French embassy.

Between 1897 and 1939, George served as delegate to the International Architects in Brussels, and during World War I, he served as a major in the Army Engineers Corps — keeping “Maj.” as a prefix for the rest of his life.

George was a distinguished contributor to his field throughout his life. He was secretary and vice president of the American section of the permanent committee of the International Congress of Architects and president of the Washington Architectural Club and the Washington Chapter of the American Institute of Architects.

This is just a short summary of the many distinguished works and efforts that George proposed or accomplished in his life.

*Author: Michael Smullen is executive director of Alumni Relations at NJIT.*



Among George’s most notable contributions was his design and construction of the Newark Courthouse and Post Office, now known as the Frank R. Lautenberg Newark Post Office and Courthouse.





## Architecture Alumnus Named AIA Fellow: **ROBERT COZZARELLI '79**

**R**obert Cozzarelli '79 has spent nearly 30 years as a professional, award-winning architect and planner specializing in health care, educational, recreational, institutional and residential design for federal, state, municipal, international and private-sector clients. His extensive expertise with new and renovated projects has earned him recognition in the health care industry. He has served as the 2004 American Institute of Architects (AIA)-NJ President and in 2009 received the honor of AIA-NJ Architect of the Year.

On Feb. 15, 2019, The American Institute of Architects Board of Directors and College of Fellows notified Cozzarelli that his notable contributions to the advancement of the profession of architecture had resulted in his elevation to The College of Fellows of The American Institute of Architects. Cozzarelli received his Fellowship medal during the Investiture of Fellows Ceremony at the AIA Conference on Architecture 2019 in Las Vegas, Nev.

A principal of both Nutley-based Cozzarelli-Cirminiello Architects and Bertone Cozzarelli Healthcare Architects, the latter of which specializes in designing long-term care facilities, such as hospitals and nursing homes, he also was recently appointed to serve on the New Jersey State Board of Architects for a term ending in 2020.

Over the course of his decades-long AIA-NJ membership, Cozzarelli has earned many accolades, including his award as AIA-NJ Architect of the Year in 2009 and his 2005 Distinguished Service honor. Other awards include the UNICO Millie Grazie Award for his pro-bono services throughout the state, and his recognition as Columbus Day & Celebration Italian-American Man-of-the-Year. In 2008, he received an Honor Roll medallion from the NJIT Alumni Association for exemplifying leadership in architecture, planning and design.

Cozzarelli is a member and past president of AIA-Newark and Suburban Architects (N&S), one of AIA-NJ's six local sections, and founded AIA-N&S's popular CANstruction event, the charitable design competition arranged by the organization each fall. He earned his Bachelor of Architecture degree from the J. Robert and Barbara A. Hillier College of Architecture and Design, is a licensed architect in four states and has served the industry for most of his professional life.

### **What are your thoughts about being named a Fellow of The American Institute of Architects?**

After graduation, I realized that NJIT provided an excellent platform for me to attain my goal of becoming a registered architect, but I also realized that I needed to be part of my professional organization, the AIA, which would enhance my professional life and I would be able to network with other young aspiring architects, as well as practicing registered architects. When I joined the AIA, it began a career lifelong involvement for me in my professional organization, from AIA-New Jersey rising through the offices of the section, chapter, region and to the AIA National level. Needless to say, I absolutely loved participating in and representing the AIA membership in every committee, task force and office that I held. I felt it was extremely important to be involved and to promote architects, architecture and the profession. But, as a young professional, I began to hear about The College of Fellows of The AIA. When I realized who they were and their mission, I reveled in their accomplishments of what they achieved throughout their career, asking myself if I could ever be elevated to such a prestigious honor.

As my career progressed, I learned to have tremendous respect for The AIA Fellows and started to wonder if I had

what it takes to be elevated to Fellow. It was something that I always had in the back of my mind, but I knew I would have to work hard and dedicate myself to my profession first before even considering Fellowship. As time went on throughout my career and involvement in the AIA, I began to realize that my curriculum vitae showed my leadership abilities within The AIA, as well as within my community. This led me to start investigating the qualification for Fellowship and it was also the encouragement of many of my architect colleagues and AIA Fellows, who inspired me to apply for Fellowship in Object 3 - Led the Institute. Their confidence in me provided the inspiration for my application.

I dedicated myself to the process and on Feb. 15, 2019, I received a letter of congratulations from the AIA notifying me that I had been elevated to The College of Fellows of The American Institute of Architects. My first reaction, I cried happy tears, and I immediately called my wife Susan (who I met at NJIT), and thanked her for always believing in me and supporting me throughout my career. I then called my mother and my children, Robert Jr. and Rebecca. I also said a prayer, thanked God and offered my thoughts to my father, who inspired me to become an architect; and may I mention that my father, Frank Cozzarelli Jr. '49, '51, also attended NJIT (NCE) and was a Fellow of The American Institute of Chemical Engineers. He was my hero, friend and greatest inspiration, who I miss dearly.

As you can tell, my thoughts are many and they are about caring and working hard throughout your career in order to achieve this honor and privilege of being elevated to The College of Fellows of the AIA. But, I must also say that, "I'm not done yet!" ■

*Author: Christina Crovetto is editor of NJIT Magazine.*



Leslie Marchio M.S. '06 competes in baking competitions around the world.

## A Sweet Career

**T**hese weren't your ordinary cookies served at the Hillier College of Architecture and Design alumni event last week.

About a dozen alumni turned out to share their career stories with students, each other, faculty and staff. Some stood out — such as architects who found their callings in building inspections, historical consulting, marketing, airport design and youth mentoring — but the crowd was most transfixed on Leslie Marchio M.S. '06, who's on her way to stardom as a cookie artist.

Marchio was a designer at Warren, N.J.-based Beer & Coleman which specializes in custom luxury homes. She earned her graduate degree at NJIT while pregnant

with her first child. She soon had three more children, became a dog owner along the way and searched for an artistic outlet during her time away from work. That led to her company name, Four Peas and a Dog, plus unintentional minor celebrity status when she began appearing in cookie competitions on television. She now makes a living teaching cookie art and continues competing around the world.

Marchio said alumni interactions with students are valuable on multiple levels. "I feel that these events are valuable not only for the students, but also the alumni. Alumni can provide the students with the realities of business restrictions — timing, politics, cost and demand — as well as show just how far the branches of architecture and design can reach," she observed.

"Students bring us a fresh outlook on creative and free thinking. That sometimes

is lost when we're in the daily business grind," she added. "Overall, these events are wonderful for networking and exposure for everyone."

Marchio demonstrated her craft. She brought a simple sugar cookie and traced the NJIT logo onto it using a digital projector, edible red paint and a scribe tool to tweak the fine details. Most of her designs are more complicated, such as clever couple's designs for Valentine's Day.

Architecture skills such as listening to clients, planning the design, using the right tools and fine attention to detail all serve her well.

Maya Gervits, director of Hillier's Littman Library of Architecture, Art and Design, organizes the event every semester. This session focused on architecture, so she is hoping to hold another event focusing on the art and design side. Regardless of the specific focus of each such event, she said, "I still hope to illustrate a variety of paths that our students can choose and demonstrate that it is up to them to be entrepreneurial, creative and active in building their professional careers."

Sydne Nance, a third-year student working toward her B.Arch. degree, said the events are helpful. "I have attended three of the Tea with Alumni events during my time here at NJIT. Every time I am thoroughly impressed with the variety of career paths our alumni take from their degrees, one of the most unique being the cookie decorator from Four Peas and a Dog," she said.

"This group of alumni really honed in on the idea that as HCAD students we receive exposure that is hard to come by in other majors or at other institutions," Nance added. "Overall, the skill sets we are learning at HCAD are going to prepare us for any passions we may have, even if these passions end up being outside of a Bachelor of Architecture degree." ■

*Author: Evan Koblentz is an NJIT Magazine contributing writer.*



## "Young Engineer of the Year" for 2019: VATSAL SHAH '08H, '09, '14



**V**atsal Shah '08H, M.S. '09, Ph.D. '14, a civil engineer with Mott MacDonald who oversees the design and construction of foundations — for wind and solar farms, wastewater treatment plants, tunnels and bridges, among others — in starkly diverse landscapes from the East Coast to Texas, is the National Society of Professional Engineers (NSPE) "Young Engineer of the Year" for 2019.

The award recognizes "outstanding contributions" to both the profession and the community. Shah's swift rise in the field is fueled by a distinctive energy mix: a scholar's interest in rethinking problems, the pursuit of new and emerging engineering projects and the drive to put in 18-hour days when needed.

At the age of 23, he became one of the youngest licensed professional engineers in the state, and by 29 was president of NSPE's New Jersey chapter. Before turning 30, he established a geotechnical practice in Mott MacDonald's environmental division, and now manages all of its projects in the Northeastern and Central U.S. Since earning his Ph.D. five years ago, Shah has taught at NJIT and now also teaches at NYU's Tandon School of Engineering. He dedicates his NJIT salary to two scholarships he's endowed in his parents' name, one to the civil engineering department and another to the Albert Dorman Honors College, of which he is an alumnus. Shah is an officer of the NJIT Alumni Association.

At Mott MacDonald, Shah continues to build the firm's soils and foundations portfolio: from traditional infrastructure such as water treatment facilities, flood walls, and roadways, to an array of energy infrastructure for the oil and gas industry,

as well as renewables. He started in energy in 2009 during the natural gas boom in the Marcellus Shale in Western Pennsylvania.

"Pumps and wells need foundation design work. I commuted four and a half hours each way every day to Pittsburgh to oversee excavations and do the necessary engineering analysis for big well pads," he recounted. "Imagine designing water wells and treatment systems for upwards of 700 gallons per minute in remote Pennsylvania on a hillside prone to landslides."

The rise of large-scale renewable energy installations has changed the landscape considerably over the past decade, and his portfolio has changed with it. Shah now is overseeing preliminary planning and design for the proposed Roaring Brook Wind Power Project in Martinsburg, N.Y., a 39-turbine, nearly 80-megawatt (MW), 5,000-acre facility with five more miles of buried electrical wire and three overhead.

A 101 MW solar installation near Nevada's Battle Mountain, part of the largest clean energy project in the state's history, presents an entirely different set of engineering challenges. "We need to make sure that there's sufficient support from the soil in the drier, hotter areas of the country," Shah said. "We need to make sure the panels won't lift up like giant sails when it's windy, or worse, crack and stop producing power."

There is yet another element to Shah's success. He's unflappable.

On his first day at then-Hatch Mott MacDonald, he learned to his disappointment that the firm no longer had a foundations sub-practice — so he threw himself into the next best thing: landfill engineering. He took a multipronged approach to the field from the outset.

While working and earning a Ph.D. in geotechnical engineering, he spent evenings in a self-funded laboratory in a rented suburban garage studying how landfills settle as their waste decomposes and the rate at which they emit methane.

During his early career, Shah followed trash trucks on their routes to count the number of cans they collected and evaluate what was in them. "We would go to the landfill and sort through 500-pound samples," he recounted. "We used that information to create a new recycling facility."

Four years later, he proposed adding a foundations sub-practice to Nick DeNichilo '73, M.S. '78, president and CEO of Mott MacDonald North America. The response was: "Go get it."

That same year, the American Society of Civil Engineers named Shah the 2013 "New Face of Civil Engineering" for his professional work and humanitarian efforts in solving water treatment problems in Haiti after the 2010 earthquakes.

Shah incorporates his experiences on the ground in his classes to help students understand the practical applications of their course work. Indeed, he credits much of his professional success to NJIT's engineering curriculum, which embraced this philosophy.

"Many of my professors were industry practitioners who taught us not just 'theory,' but how to think like an engineer," he noted. ■

*Author: Tracey L. Regan is an NJIT Magazine contributing writer.*

## Honors Team Taps Inventive Skills to Help Handi-Capable Dancer



The call was put out to NJIT's Albert Dorman Honors College (ADHC) this past spring and nine Dorman Scholars answered it. Their charge was to design and construct a tap-dance board for a handi-capable wheelchair user — a patient at Mount Sinai Health System in Manhattan who would be participating along with able-bodied dancers in the inaugural performance of the nonprofit, all-abilities dance troupe, Tap: On Tap, held at the hospital Oct. 25 in observance of World Stroke Day and National Disability Employment Awareness Month.

The show incorporated the Tap Dancing Hands Down® system, where an individual wears gloves outfitted with taps and executes the tap steps with his/her hands on a kitchen cutting board. Mary Six Rupert, a professor of tap at Wagner College and former Rockette, created the unique tap-board solution more than a decade ago initially for her mother, a tap instructor whose mobility was significantly curtailed by a stroke, and has since used the system in her work with stroke and spinal-cord-injury patients at Mount Sinai (she is behind the formation

of Tap: On Tap as well). But because the performance required a board that could be attached to a wheelchair and move freely instead of sitting stationary on the dancer's legs — or on a table as is done traditionally with Tap Dancing Hands Down® — some modifications were necessary.

That's when Tomlee Lahayil Abraham '99, '00, an Honors College science, technology and society, and management alumnus, who today is vice chair of administration and health system administrator of the Kimberly and Eric J. Waldman Department of Dermatology at the Icahn School of Medicine at Mount Sinai, experienced a light bulb moment.

"It was just clear as day to me. We needed a solution and NJIT is all about innovation," said Abraham, also a student of Rupert's and a dancer in Tap: On Tap. "I knew how NJIT prepared everyone to think in very practical, real-world types of ways. ... An NJIT student knows how to get things done."

Led by Lauren Hutnik, now at Rutgers New Jersey Medical School, the ADHC team included Birju Dhahuk, Thinuri Fernando, Joshua Gaughan, Zean Go, Ryan Madden, Sandra Raju, Tyler Rodriguez and Sophia Tran. The group conducted site visits and interfaced with Abraham, Rupert and the handi-capable wheelchair user, Stephanie (pictured above with the students and Rupert), to develop the project plan and then create and test the tap-dance board.

With a budget of \$125 and a tight turnaround — just two months from the first project meeting to delivery in April before rehearsals started in May — the students began by brainstorming design ideas. They kept in regular touch via the messaging app GroupMe and convened regularly to analyze proposals and decide their final direction. Next, they ordered pipes, clamps and other materials and met at NJIT's Makerspace to assemble their solution. They also visited the hospital to measure Stephanie's wheelchair and ensure the built device fit properly on it.

The challenges, said Hutnik, were "finding a flexible joint that would allow the user to move the device away or closer in the x-direction without having to take the item off and reassemble," as well as designing "a device that was sturdy and would not move around too much while the user was tapping/dancing on it."

Also important was the ability to remove the device quickly and easily, added Gaughan '22, a mechanical engineering major.

The team needed to ensure the user's comfort, too. "Stephanie has a unique wheelchair and we had to find a good place on the chair to attach the device ... [so it] would not get in the way of her normal movements," Hutnik pointed out.

Abraham and Rupert are thrilled with the result, which they note stays firmly in place while enabling the handi-capable dancer to freely tap with her fellow performers. And with rehearsals and the performance having gone well, and feedback from Stephanie nothing short of glowing, the project has been a win-win for all involved.

"How often is it you come up with something and nail it?" said Abraham.

"It's one of the first real-world projects I've done for someone else," said Gaughan. "This project was very rewarding, because we got to see firsthand how our work had a great impact." ■

*Author: Julie Jacobs is an NJIT Magazine contributing writer.*



## Businessman, Entrepreneur and Agile Thought Leader: **DONALD J. REIFER '69**



**D**onald J. Reifer '69 is recognized as an agile thought leader and a leading figure in the fields of software engineering and management. He has more than 40 years of management experience in industry, academia and government. He is skilled in program/project/product management, development, metrics, measurement and change management. He has led major agile enterprisewide initiatives, headed process improvement efforts, built businesses, managed major programs and changed the way organizations did their business. Additionally, he has acted as an adviser to senior management in several Fortune 500 companies, sat on boards of directors, led government panels, served on the board of trustees of Prescott College and served as a visitor at the University of Southern California's (USC) Center for Software Engineering.

From 1993 to 1995, Reifer managed the Department of Defense Software Initiatives Office. In this position, he led several major enterprisewide initiatives as a senior executive service official (Lt. Gen. equivalent). Previously, while with TRW, Reifer managed their Global Positioning Satellite efforts. While with the Aerospace Corporation, Reifer led all the software efforts related to the Space Transportation System (Shuttle). Currently, as a trusted adviser, he helps executives in Fortune 500 firms transform organizations using technologies emphasizing agile and agile-at-scale methods. He is known for his business, technical, team-building and practical problem-solving skills. Among his key accomplishments, he has built a management consulting firm from scratch; helped start up businesses such as Ashton-Tate and grow others; as a Hitachi

consultant, helped develop engineering workstations that were credited with saving millions in cost; as a Nokia consultant, devised an R&D/acquisition strategy that led to new product sales; and as a deputy program manager, led the on-time and budget delivery of software for a large satellite program.

Reifer received his B.S. in electrical engineering from NJIT, his M.S. in operations research from USC and the Certificate in Business Management for Technical Personnel from UCLA. He has published 11 technical books and over 200 software engineering and management papers. Reifer's many awards include the U.S. Secretary of Defense's Medal for Outstanding Public Service, the NASA Exceptional Service Medal, the AIAA Software Engineering Award and the ICEAA Freiman Award. He is a member of Eta Kappa Nu, Omicron Delta Kappa and Who's Who in the West.

Although he currently is semi-retired, Reifer said that he loves his work and continues to assist clients in change management as a consultant in the software field. His current focus is on introducing ways to improve software workforce productivity. He approaches this scientifically via benchmarking. This allows him to win arguments using the numbers which are hard to dispute.

Reifer did not envisage becoming a "software guru" when he was a student at NJIT. "My emphasis in school was on digital design and my love was mathematics and the scientific method," he said. "My software career was a happenstance. My first job after graduation was in software. Because I liked the work so much, I never pursued anything else. My growth was

a function of my inner drive. Many of the opportunities that I took advantage of while progressing was a function of luck, not skill. However, I was smart enough to recognize and jump on them."

During his first year at NJIT, Reifer lived in a cold-water flat in Newark in the Alpha Sigma Mu fraternity house (veteran's frat). "I got lucky the next year," he said. "NJIT had just opened its new Alumni Center and was looking for someone to be its resident manager. The job was perfect for me because it provided me both management experience and free room and board in return for my duties. This was a big deal because in the 1960s, NJIT had no student housing. In addition, as part of my duties, I also got to work with the Alumni board and administration. This helped me realize that I wanted to pursue a career in technical management."

NJIT (NCE) will always have a special place in Reifer's heart because the institution gave him a chance.

"My grades were average and SATs marginal," he recalled. "But, NJIT admitted me because I had potential and was a veteran. The faculty and administration were supportive and I was provided with access to the resources I needed to ease my burden. My veteran's frat provided me the mentoring that I needed to make the transition and, of course, the GI bill helped with my financial burdens." ■

*Author: Christina Crovetto is editor of NJIT Magazine.*

## 1970s

**'78 General (Ret.) ELLEN PAWLIKOWSKI** (Chemical Engineering, HON '13) was appointed an independent member of Intelsat's board of directors. Pawlikowski, who also serves on the board of directors of the Raytheon Company, is a Fellow of the American Institute of Aeronautics and Astronautics and a member of the National Academy of Engineers.

## 1980s

**'80 JEFF MILANAİK** (Mechanical Engineering) will be honored as an outstanding industry leader by The March of Dimes Greater NY/NJ Market's 2020 Real Estate Awards in June. Milanaik is Northeast region partner at Bridge Development Partners. He has been with the company since 2014 when he opened Bridge's New Jersey office.

**'81 FRANK GIANNELLI** (Industrial Engineering, M.S. in Engineering Management '90) joined the American Society of Mechanical Engineers as managing director of information technology. Previously, he served as senior director of information and digital technology solutions at the United States Golf Association.

**'82 JAMIL HERMES** (M.S. in Computer Science) joined Cognosante as chief growth officer. Hermes has over 20 years of professional experience in business development, technology leadership and program management and most recently served as senior vice president and chief growth officer at OptumServe.

**'83 H. EDDIE CRAIG** (Electronic Engineering Technology) retired as a special agent with the Federal Bureau of Investigation after more than 31 years. Craig attended NJIT at night while working as an electronics technician for the FBI. Before attending NJIT, Craig

served as an aviation electronic technician and air crewman for four years in the United States Coast Guard. Craig currently is president of Craig Specialized Investigations, a private investigation company.

**'89 ERIC BOSCHEN** (Civil Engineering) was named by the American Society of Civil Engineers North Jersey branch as Civil Engineer of the Year for 2019. Boschén, a professional engineer in Connecticut, New Jersey and New York, is currently senior associate at Dewberry.

## 1990s

**'93 STEPHAN WILLIAMS** (Architecture) was named director of business and project development for the New Jersey region at Wohlsen Construction Co. Williams has more than 30 years of experience in the construction industry and will be responsible for fostering client relations and new opportunities.

**'95 DIANE ELLIOTT** (M.S. in Environmental Science) joined Greater Good law firm as "of counsel." Elliott previously served nine years as executive director at New Bethany Ministries. The first 20 years of her professional career were spent as a criminal defense trial attorney.

**'96 MICHAEL HANRAHAN** (Architecture, M.S. in Management '96) was promoted to principal of Clarke Caton Hintz. Since joining the firm in 1996, he has served as lead designer and project manager. Hanrahan was also elected an AIA New Jersey regional representative to the AIA Strategic Council Assembly.

**'98 BOB ELLIS** (M.S. in Mechanical Engineering) was named chief engineer at the U.S. Department of Energy's Princeton Plasma Physics Laboratory (PPPL). Ellis has spent almost 40 years designing and overseeing construction of components

of some of the world's biggest fusion experiments, from PPPL's Tokamak Fusion Test Reactor and the National Spherical Torus Experiment-Upgrade, to the Joint European Torus in England and the Korean Superconducting Tokamak Advanced Research fusion reactor in South Korea.

**'99 GINNY BARO** (M.S. in Computer & Information Science, Ph.D. in Information Systems '09) was highlighted as one of five thought leaders of color by *Color Magazine*. Baro is a certified international executive coach, speaker and No. 1 bestselling author of *Fearless Women at Work*.

**'99 ANDREW BLUMETTI** (Architecture) joined Regions Affordable Housing's originations group as senior vice president and relationship manager serving the Northeast region. Previously, Blumetti was managing director at The Bank of New York Mellon. Before this role, Blumetti served as senior client manager and vice president within JP Morgan Chase's commercial real estate group.

## 2000s

**'01 ERIC HAUSLER** (M.S. in Management) has been appointed CEO of Greenwood Racing, Inc. Hausler previously served as director of VICI Properties Inc. Before that, he held the position of CEO of Isle of Capri Casinos Inc.

**'02 NATHAN DRAPKIN** (M.S. in Management) joined EmpiRx Health as head of strategic partnerships. Drapkin most recently served as vice president of sales and client management at Cigna. Before his role at Cigna, he held sales leadership roles at Horizon BCBSNJ and Aetna.

**'03 ALEXANDRA POLLOCK** (Architecture), principal at FXCollaborative, was promoted to chief



technology officer. Her previous position was director of design technology. Pollock has been with the firm since 2013.

**'05 JONATHAN NINNIS** (Architecture) was named a "40 Under 40 Class of 2019" by Building Design & Construction. Ninnis founded OC Development Management in 2015 and is on the Dean's Council at NJIT's J. Robert and Barbara A. Hillier College of Architecture and Design.

**'05 MARJORIE A. PERRY** (MBA in Management of Technology) was featured on the ROI-NJ list, "ROI Influencers Real Estate 2019: Power Players." Perry, CEO and president of MZM Construction & Management, also serves as chair of NJIT's Board of Overseers.

IN MEMORIAM

Jules Lozowick '43  
Alan Rubin '48, '52  
Donald Dougherty '50  
Robert Strauss '50  
Jack Papazian '52  
Edgar Wolf '52  
Neale Sweetman '59  
John Ripak '60  
Nicholas Grasso '65  
John Walsh '66  
Bernard Yorkanis '66  
Gilbert Lotti '67  
Robert Glick '68  
William Hylicke '68, '73  
Edmund Skorynko '68

Gordon Sly '70  
Joseph Moran '73  
Kenneth Steigerwalt '73  
Thaddeus Niemiec '78  
John Stensler '78  
John Wiegand '82  
Mark Dikovics '83  
Philip Lebet '86  
Robert Scheyhing '86  
Ralph Koehler '93

*Correction: John Parsons '70, '86 was incorrectly included in this section of the Fall 2019 issue. We sincerely apologize for the error.*

THIS YEAR, WE CELEBRATE ANNIVERSARIES FOR CLASSES ENDING IN 5s AND 0s. Join hundreds of alumni and friends to see the new changes on campus, reconnect with old friends and hear about the strides your alma mater has made since your last visit. Whether you graduated five years ago or 50, it's time to reconnect with NJIT at Alumni Weekend.



ALBERT DORMAN HONORS COLLEGE  
TWENTY-FIFTH ANNIVERSARY

2020 marks the 25th Anniversary of the Albert Dorman Honors College. When the Honors Program became a full College, it was named after our benefactor, Albert Dorman '45, Ph.D. '99 HON. We will be celebrating this milestone with a series of special alumni events throughout the year.

HERE IS WHAT WE HAVE IN THE WORKS FOR 2020:

Passing the Torch  
Alumni and Student Networking  
Roundtable Colloquium and Alumni Reception  
  
April 22, 2020  
2:30 - 4 p.m.  
Colloquium  
4:30 - 6:30 p.m.  
Cocktail Reception

Alumni Weekend  
Welcome: A Toast to Albert Dorman and the 25th Anniversary of the ADHC  
  
May 29, 2020  
6 - 8 p.m.

ADHC Alumni Gala  
Recognizing Dr. Joel Bloom and the 25th Anniversary of the ADHC  
  
October 9, 2020  
6 - 9 p.m.

We hope you'll help make the Albert Dorman Honors College's 25th Anniversary a success for all who have played a vital part in its great history — Albert Dorman, Dr. Bloom, Board of Visitors members, our hard-working students — and you, our distinguished alumni!

FOR MORE INFORMATION, CONTACT [honors@njit.edu](mailto:honors@njit.edu)



# CALENDAR OF EVENTS

## **HCAD Design Showcase**

**April 2, 2020**

**12 noon**

**NJIT Campus  
Newark, N.J.**

## **Scholarship Brunch**

**April 3, 2020**

**NJIT Campus  
Newark, N.J.**

## **Central NJ Alumni: Brunch and Wine Tasting at Old York Cellars**

**April 19, 2020**

**11 a.m.**

**Ringoes, N.J.**

## **Black Alumni Social**

**April 23, 2020**

**6 p.m.**

**NJIT Campus  
Newark, N.J.**

## **Florida Gulf Coast Alumni: Tampa Bay Rays vs. Yankees at Tropicana Field**

**May 14, 2020**

**7 p.m.**

## **Alumni Weekend 2020**

**May 29-31, 2020**

**NJIT Campus  
Newark, N.J.**

## **Register Online**

**[njit.edu/alumni/events](http://njit.edu/alumni/events)**

## **By Phone**

**973-596-3441**





## IMAGES FROM NJIT BIG BEAR SOLAR OBSERVATORY PEEL AWAY LAYERS OF A STELLAR MYSTERY

**A**n international team of scientists, including three researchers from NJIT, has shed new light on one of the central mysteries of solar physics: how energy from the Sun is transferred to the star's upper atmosphere, heating it to 1 million degrees Fahrenheit and higher in some regions, temperatures that are vastly hotter than the Sun's surface.

With new images from NJIT's Big Bear Solar Observatory (BBSO), the researchers have revealed in groundbreaking, granular detail what appears to be a likely mechanism — jets of magnetized plasma known as spicules that spurt like geysers from the Sun's upper atmosphere into the corona.

In a paper published in the journal *Science*, the team described key features of jet-like spicules that are in solar terms small-scale plasma structures, between 200 and 500 kilometers wide, that erupt continuously across the Sun's expanse. The researchers also, for the first time, showed where and how the jets are generated and the paths they travel, at speeds of around 100 kilometers per second in some cases, into the corona.

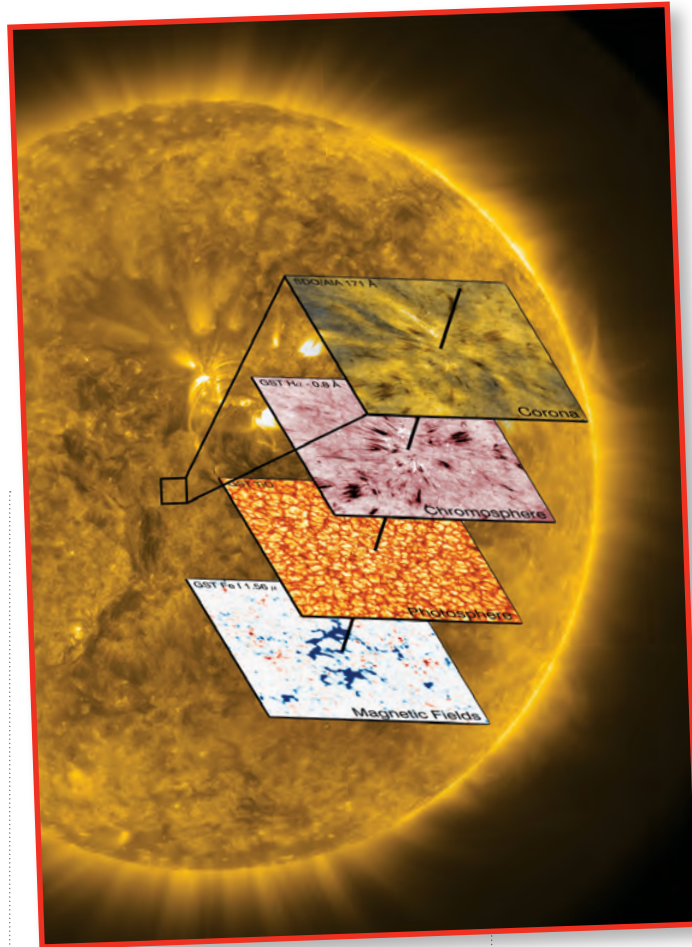
"Unprecedented high-resolution observations from BBSO's Goode Solar Telescope clearly show that when magnetic fields with opposite polarities reconnect in the Sun's lower atmosphere these jets of plasma are powerfully ejected," said solar physicist Wenda Cao, BBSO's director and an author of the paper.

He added, "This is the first time we've seen direct evidence of how spicules are generated. We have tracked these dynamic features in the H-alpha spectral line down to their foot points, measured the magnetic fields at their foot point, captured the migration of the emerging magnetic elements and verified their interaction with existing magnetic fields

of the opposite polarity."

Images captured in the extreme ultraviolet spectrum by NASA's Solar Dynamics Observatory spacecraft were used to track the transportation of energy in the corona. These observations showed that it is also common for spicules to be heated to typical coronal temperatures. Invisible to the human eye except when it appears briefly as a fiery halo of plasma during a solar eclipse, the corona remains a puzzle even to scientists who study it closely. Beginning 1,300 miles from the star's surface and extending millions more in every direction, it is more than a hundred times hotter than lower layers much closer to the fusion reactor at the Sun's core.

Solving what astrophysicists call one of the greatest challenges for solar modeling — determining the physical mechanisms that heat the upper atmosphere — requires high-resolution images that were not available until BBSO's 1.6-meter telescope, the largest operating solar telescope in the world, began capturing images a decade ago.



A multi-layered view of solar spicules: (from left to right) observations of the corona from NASA's Solar Dynamics Observatory.

Scientists at Big Bear have also captured the first high-resolution images, for example, of magnetic fields and plasma flows originating deep below the Sun's surface, tracing the evolution of sunspots and magnetic flux ropes through the chromosphere before their

dramatic appearance in the corona as flaring loops.

Cao says it took an international team with diverse expertise and equipment located on Earth and in space to delve this deeply into the Sun's fundamental physics. Cao developed the scientific instruments on Big Bear's telescope and oversaw their operation, while NJIT's Vasyl Yurchyshyn generated the observations, processed the data and advised on its use, and NJIT's Kwangsu Ahn processed the vector magnetic fields data for scientific usage. Tanmoy Samanta and Hui Tian from Peking University in China defined the novel discoveries and wrote the manuscript; they are its first authors.

Scientists from the Max Planck Institute for Solar System Research in Germany, NASA's Marshall Space Flight Center, the University of Sheffield in the U.K., Eötvös University in Hungary, Kunming University of Science and Technology in China, the University of Graz in Austria and Indian Institute of Astrophysics all played roles. ■

Author: Tracey L. Regan is an NJIT Magazine contributing writer.



New Jersey Institute of Technology  
University Heights  
Newark, NJ 07102-1982  
njit.edu

---

NONPROFIT ORG.  
U.S. POSTAGE  
PAID  
LANCASTER, PA  
PERMIT NO. 299

---



---

**ALUMNI WEEKEND** 2020

---

**MAY 29 – 31**

---

**[njitalumniweekend.com](http://njitalumniweekend.com)**