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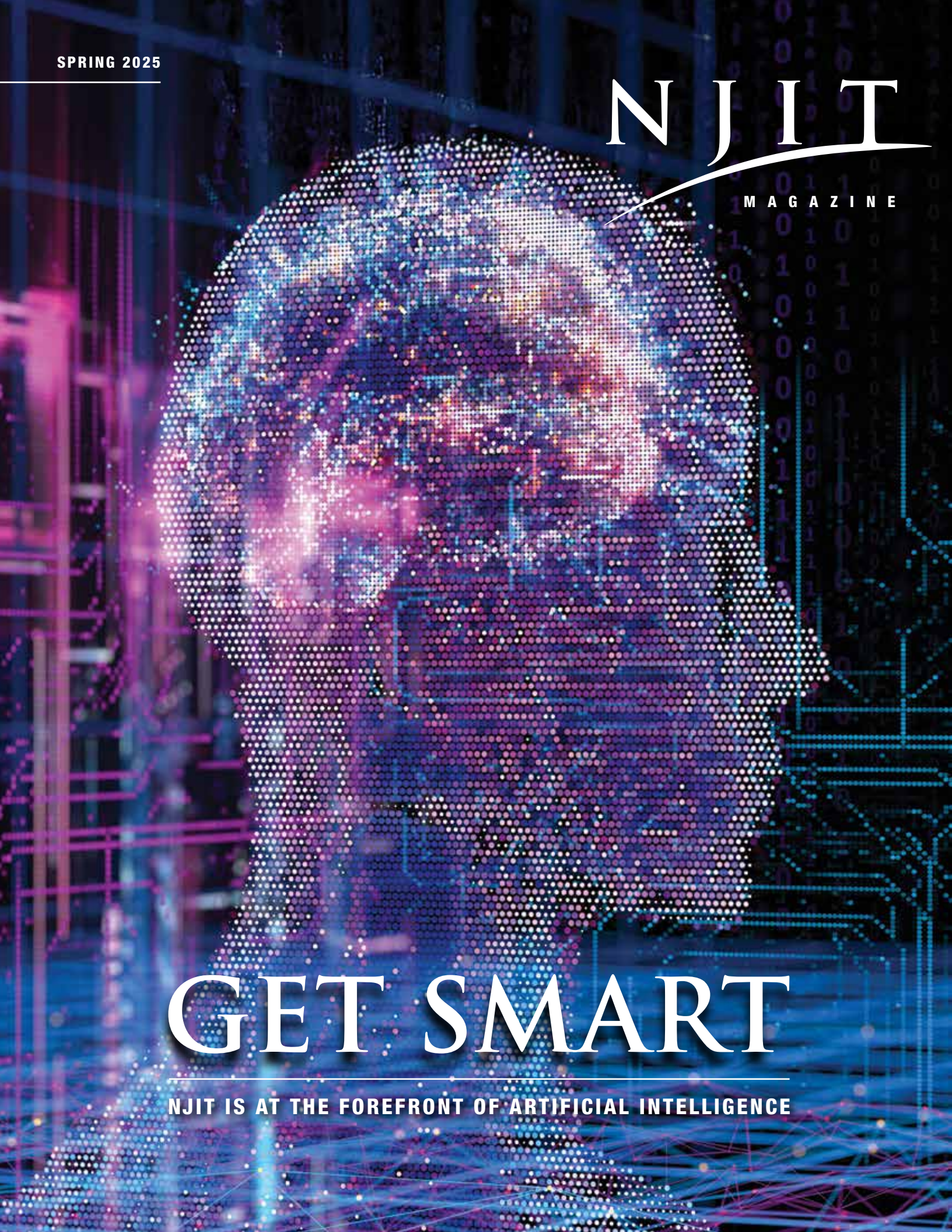
NJIT
MAGAZINE



GET SMART

NJIT IS AT THE FOREFRONT OF ARTIFICIAL INTELLIGENCE

LEADING THE WAY

This issue of *NJIT Magazine* highlights some very impressive alumni, introduces two new university trustees, reports on some exciting new initiatives and research, and much more, but its focus is on the exploding field of artificial intelligence (AI) and how NJIT is assuming a position of leadership in that arena.

Though many of us in higher education have worked with or been exposed to AI and machine learning for quite some time, the launch of ChatGPT and other mainstream AI tools has brought the technology to the forefront of public consciousness. There is good reason for that. AI is arguably going to have the greatest effect on the creation and delivery of knowledge goods and services since the Internet and the smartphone.

In this issue, we provide you with an overview of the many ways in which NJIT is pioneering, advancing and applying AI strategically to benefit individuals, industries and society as a whole. We also report on some of the work we are doing to mitigate potential dangers related to this burgeoning field.

With extensive expertise in machine learning, computer vision, natural language processing and robotics, NJIT is a leader in the transformative field of AI. We have conducted $50+ million annually in AI-related work for some time, and now we are growing that investment. NJIT recently announced a new $10+ million initiative that includes the opening of the Grace Hopper AI Research Institute, which is the new hub for AI activity on campus and is home to both the Center for AI Research and the Institute for Data Science.

In this issue, you will learn much more about our work in AI, including our collaborations with technology partners like Microsoft and NVIDIA, the AI services provided to individual companies and business sectors by our New Jersey Innovation Institute, the new academic programs we are offering in AI, how the technology is being infused across our broader curriculum in order to prepare students for the future of the industries they will enter, and much more.

I hope you enjoy reading this issue and learning about some of the fascinating things that NJIT and its people are doing to improve and protect our world. ■

Sincerely,

Teik C. Lim
President

NJIT MAGAZINE

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NJIT ALUM IS A GLOBAL CLIMATE INNOVATOR

Chao Yan, an NJIT alumnus and co-founder of Princeton NuEnergy, made *Business Insider's* Climate Action 15 for 2024 list, which celebrates global leaders deploying innovative solutions to combat the climate crisis.

In its profile of Yan '13, '17, *Business Insider* wrote about the experiences that motivated him to seek a new way to recycle batteries. Yan's work tackles the pressing issue of lithium-ion battery recycling, a critical element in advancing clean energy.

Raised in Taiyuan, China, a city shaped by coal and steel industries, Yan grew up questioning the environmental costs of industrial progress. That curiosity ultimately guided him to NJIT, where he earned a master's and Ph.D. in chemistry under the mentorship of Chemistry Professor Emeritus Lev Krasnoperov. There, Yan began pioneering research that now drives Princeton NuEnergy's revolutionary plasma-assisted recycling technology.

Conventional recycling methods for lithium-ion batteries are energy-intensive and polluting, but Yan and his team have developed a sustainable alternative. Princeton NuEnergy's process recovers up to 98% of valuable battery materials while significantly reducing costs and emissions.

In the U.S., only about 5% of lithium-ion batteries are currently recycled, but by 2030 that number will need to improve dramatically. Along with increasing battery waste from personal electronics, cars may also soon contribute to the problem, as electric vehicle sales are expected to jump from 1.7 million to 26 million by the end of the decade. ■

Photo: iStock

RESEARCHERS FIND CRITICAL ERRORS IN MEDICAL APPS

Potentially deadly mathematical errors are prevalent among mobile applications used in clinical and emergency room settings, but a team of researchers at NJIT's Ying Wu College of Computing has found provable solutions that may save lives.

The apps, known as medical score calculators, can be downloaded by anyone and are popular among less experienced health care staff. But they're rife with errors because of flawed source data from medical reference tables and bad implementations from developers who don't understand the science.

A team lead by Computer Science Professor Iulian Neamtiu, including graduate students Sydur Rahaman and Raina Samuel, who now work at Google and Montclair State University, respectively, began finding such errors years ago during wider work on event-based mobile apps.

"The barrier to entry for publishing an app is very low," Neamtiu explained. "Anyone with marginal programming skills can publish onto mobile app stores and call that a medical or health app."

Overall, the researchers found significant errors in 14 of 90 Android apps.

Beyond identifying incorrect data, the team built novel software for its investigation. In mathematical terms, researchers treated the apps as guilty until proven innocent, using a testing method called an automated theorem prover.

"We realized that these apps merely interpret something that MDs have been publishing for 15, 20 years," Neamtiu said. "We found that the original sin is actually in the medical papers, because the medical papers had errors in them and had these parameter ranges and patient ages that were just not covered." ■

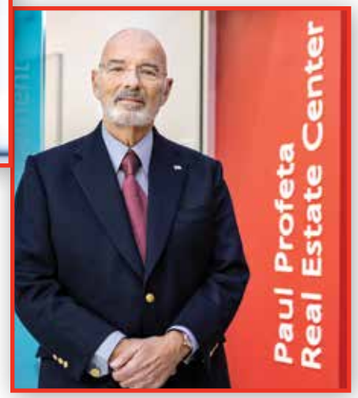
NEW BOARD LEADERSHIP AND MEMBERS

Two key NJIT boards named new chairs and the university's Board of Trustees welcomed two new members. Paul Profeta, a commercial real estate investor and developer who is passionate about the City of Newark, and Kim Vierheilig '99H, '00, an alumna who is president of the national buildings group at STV, have joined NJIT's Board of Trustees.

Profeta is a renowned philanthropist who has supported many causes in Newark, including his generous endowment of the Paul Profeta Community Entrepreneurship Program at the New Jersey Innovation Institute and the Paul Profeta Real Estate Technology, Design and Innovation Center at the Martin Tuchman School of Management. At STV, Vierheilig leads a multidisciplinary team engaged in all aspects of building planning, programming, architecture, interior design and engineering. She holds two degrees from NJIT: a bachelor's in architecture and a master's in management.

Photo: Courtesy of Kim Vierheilig

Additionally, Steven Saperstein '84, became chair of the NJIT Foundation Board of Directors, while Dean Paranicas assumed the role of chair of the NJII Board of Directors. Saperstein, an NJIT alumnus, is the former chief operating officer of PGIM Fixed Income, where assets under management rose from $150 billion to $850 billion on his watch. In 2012, he earned the Edward F. Weston Medal for his outstanding personal, professional and civic achievement and commitment to NJIT. Paranicas is the retired president and CEO of the HealthCare Institute of New Jersey, a trade association for the state's research-based biopharmaceutical and medical technology companies. He has served on the NJII board since 2014. ■



INTRODUCING THE NJII VENTURE STUDIO

The New Jersey Economic Development Authority (NJEDA) and New Jersey Innovation Institute introduced the NJII Venture Studio as the latest Strategic Innovation Center (SIC) in the state.

The studio will accelerate and commercialize high-tech and information technology developed by NJIT, NJII and NJIT's corporate partners. SICs are designed to nurture research and development, innovation and entrepreneurship through mentorship, networking and business support, sparking the creation of new companies and fueling economic growth.

The studio offers business training, operational support, workspace and guidance in management for startups looking to bring research to market. As planned, NJEDA will match NJII's investment of $5.8 million, with total program funding of $11.6 million.

The studio also offers students hands-on experience and training. NJII previously spun out two for-profit ventures, Healthcare Innovation Solutions and BioCentriq, and its studio aims to launch eight to 12 startups in four years.

"We are excited to embark on this partnership with the NJEDA to further build the state's innovation economy," NJII President Michael Johnson said. "We see the NJII Venture Studio as a powerful tool that will bridge the gap between translational research and commercialization, resulting in innovative companies and world-changing technologies." ■

A NEW CENTER AND A NEWARK PROJECT COMPLETED

Photo: Deric Raymond

NJIT has launched the Center for Educational Innovation and Excellence (CEIE), a pivotal initiative designed to enhance teaching practices and learning outcomes.

Under Inaugural Director Nikki Bosca, the CEIE will foster innovative pedagogical methods, support the integration of advanced educational technologies and promote impactful research in teaching and learning.

Bosca brings a passion for teaching excellence and student achievement to her new role. Previously, she was associate director for online teaching and course development in the Office of Online Programs and associate director of the Institute for Teaching Excellence, which the CEIE succeeds.

"The CEIE will be instrumental in supporting our faculty as they continue to implement innovative learning frameworks and harness the power of educational technology to support the success of our students," said John A. Pelesko, provost and senior vice president for academic affairs.

Separately, the Center for Building Knowledge at NJIT's Hillier College of Architecture and Design completed its work to help the Newark Board of Education assess its facilities.

The work included condition assessments of every school building, the development of a database housing digital twins of each school building and an evaluation of the educational adequacy of the schools.

"Our student teams have engaged in experiential learning using Matterport cameras and transferring data from a point cloud into Revit to create 3D digital twins," said Terra Meierdierck, energy and education program manager at the center. "The Newark Public Schools now have an online platform and a dataset that allows them to have digital access to every building and to prioritize facility improvements." ■

TOP 50 IN ENTREPRENEURSHIP NATIONALLY

For the sixth straight year, NJIT's undergraduate program for entrepreneurship ranks in the top 50 nationally, according to The Princeton Review and *Entrepreneur* magazine.

At No. 44, NJIT improved three places from the previous year. Also, its graduate program for entrepreneurship rose two places to No. 29, making it the only New Jersey school on the list.

"We help students turn knowledge into action," said Oya Tukel, dean of NJIT's Martin Tuchman School of Management (MTSM), a key hub for entrepreneurship. "We help them recognize gaps in the business world and hatch business plans that address them."

Spokes in NJIT's entrepreneurship wheel include:

- NJII Venture Studio, a partnership of NJIT's New Jersey Innovation Institute and the New Jersey Economic Development Authority that nurtures R&D, innovation and entrepreneurship
- Tech Venture Support Program, in which graduate students provide strategically valuable assistance to tech startups, including funding proposals for technology development and commercialization
- Center for Student Entrepreneurship, a new offering that focuses exclusively on undergraduates and is led by Executive Director of Student Entrepreneurship Kathy Naasz, a research professor at MTSM
- Center for Translational Research, which seeks to commercialize faculty intellectual property
- Paul Profeta Community Entrepreneurship Program, which delivers workshops to underserved business founders in Newark

In addition, NJIT is a partner in a Northeast hub of the National Science Foundation Innovation Corps, which helps researchers turn discoveries into action. ■

1881 SOCIETY

PAUL A. RUBY '50
A LEGACY FOR FAMILY AND FUTURE ENGINEERS

LIKE SO MANY COLLEGE STUDENTS OF HIS GENERATION, Paul Ruby '50 rarely saw the Newark College of Engineering campus while the sun was still up.

A World War II veteran, Paul worked full-time during the day and pursued his bachelor's degree in mechanical engineering at night. After years of this weekly grind, Paul spent his final year at NCE as a full-time student, graduating in 1950 at the age of 38. Following a successful career at Best-Champlain Corporation, Paul put his skills to work in the classroom, becoming a teacher at Bergen Tech and eventually serving as a guidance counselor at New Milford High School.

As an educator, Paul was committed to inspiring the next generation of engineers and scientists. He further invested in this vision through his estate plans, creating a charitable trust that provided Paul's nephews with two decades of income and ultimately established and endowed the *Paul A. Ruby '50 Highlander Promise Scholarship* at NJIT.

As a Highlander Promise award, the *Ruby Scholarship* ensures that select New Jersey students from households with limited financial means will have the opportunity to attend NJIT with little-to-no tuition burden.

Hundreds of NJIT alumni and friends – just like Paul – have invested in the future of NJIT by establishing charitable trusts or gift annuities that provide lifetime income for loved ones. To learn more about Paul and others who have created a legacy at NJIT, please visit "Donor Stories" at njit.giftplans.org.

To learn more about the Highlander Promise Scholarship Program at NJIT, please contact:

Beth S. Kornstein
Interim Vice President, Development and Alumni Relations
973-596-8293
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Your legacy begins today.

NJIT

Photo: NJIT Athletics

WELCOME TO THE HALL!

NJIT Athletics inducted one team and seven individuals into its Athletic Hall of Fame at its 21st annual ceremony. Here's how they got there.

2006 Baseball Team The Highlanders compiled a 27-17 overall record and captured the program's only Eastern College Athletic Conference Championship at the Division II level.

Sabrina Baby '10 (Women's Volleyball) A two-time team captain for the team, Baby set school records in career digs (2,301), digs in a season (795), career service aces (189) and service aces in a season (71).

Clayton Barker '07 (Men's Basketball) An All-Met second-team selection and two-time Central Atlantic Collegiate Conference honoree, Barker concluded his collegiate career with 1,617 points.

Dena (Baskous) Prastos '07 (Women's Soccer) The Alaska native ended her career as a defender with first-team all-conference honors.

Umar Saeed '08 (Men's Cross Country/Track and Field) A two-time All-East selection, Saeed set a school record at the 2008 IC4A University Division I 5-mile race with a time of 25:32.

Dan Carroll '65, '70 (Baseball) A team captain during his junior and senior campaigns, Carroll led the team in victories and innings pitched.

Marjorie A. Perry '05, '24 HON (Herb M. Iris Recipient) The award recognizes exemplary leadership and support in the advancement of athletics.

Bill Ehrhardt '79, '94 (Robert Swanson Recipient) The award recognizes exceptional support for athletics. ■

Photo: NJIT Athletics

NEW FACES OF WOMEN'S BASKETBALL

NJIT women's basketball Head Coach Mike Lane welcomed a trio of newcomers for the 2025-26 season.

"All three are excellent students who sought the academic challenge of NJIT, and of course they are coming to Newark to make our basketball program better," Lane said.

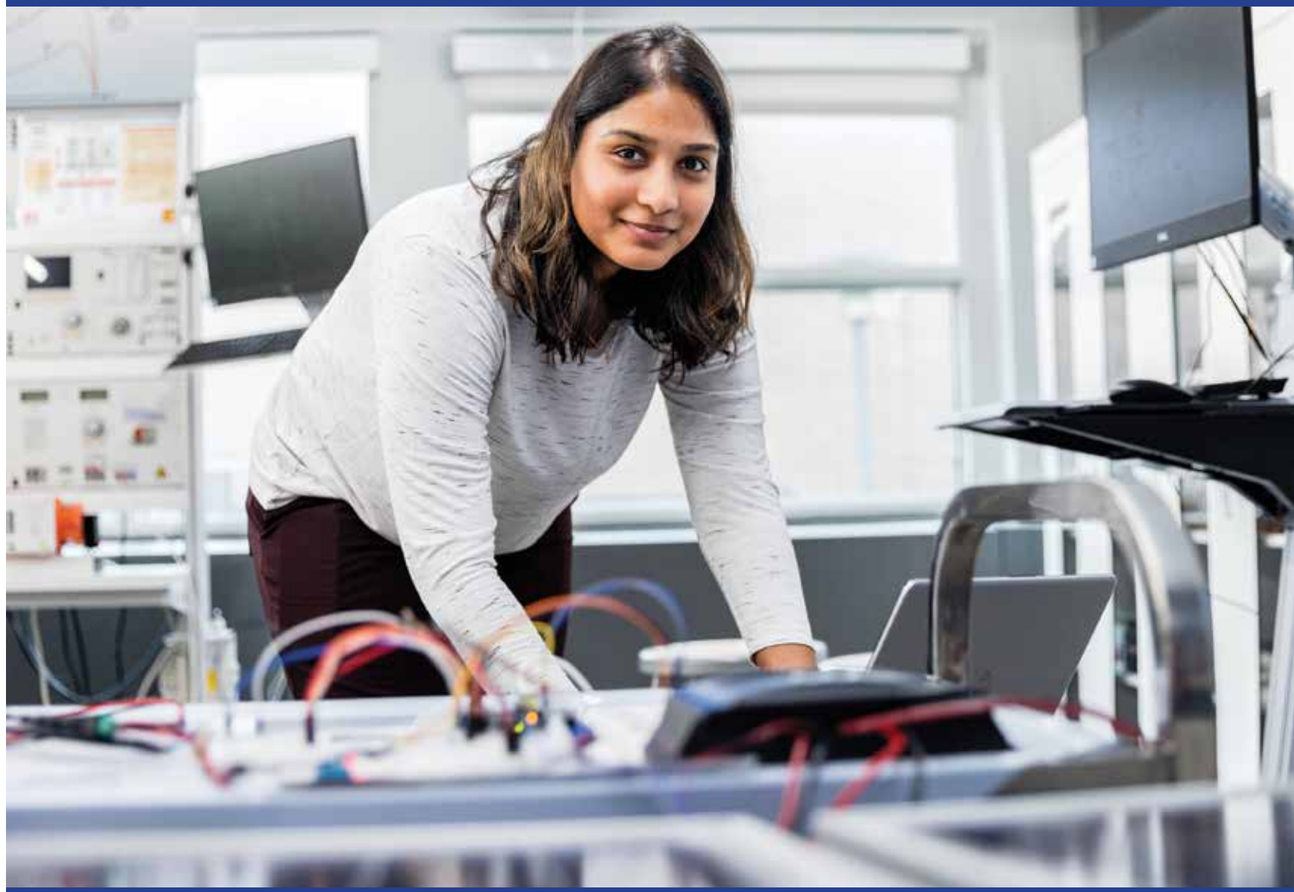
Here's a closer look at the latest Highlanders.

ADDISON SHEN, Concord, Mass. The 6-foot guard was a two-year captain at Concord-Carlisle High School, where she made the honor roll three years in a row. Lane described her as a "great student of the game." She plans to major in business.

MIA GESTOSANI, Somerset, N.J. The 5-foot-8 guard was a four-year starter at Mount St. Mary Academy, earning most valuable player honors twice and scoring 1,000 points in her third year. Lane said that she "knows how to run a team and can create her own offense." She intends to major in computer science.

LAUREN LEE, New Port Richey, Fla. The 6-foot-2 forward helped guide River Ridge High School to a Final Four appearance, Regional Championship and District Championship (twice). Lane sees her as a "versatile player who can impact the game in a number of ways." She also plans to major in business. ■

Talent is everywhere.
Opportunity is not.



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GET SMART

NJIT Is at the Forefront of Artificial Intelligence

With extensive expertise in machine learning, computer vision, natural language processing and robotics, NJIT is becoming a visionary leader in the burgeoning and transformative field of AI. After announcing a new $10+ million initiative — and the opening of the Grace Hopper AI Research Institute — which builds on an already robust $50+ million annually in AI-related work, NJIT is boosting its academic and research activity in areas that will transform industries and lives.

The Grace Hopper AI Research Institute, with support from an anonymous donor and matching funds that total $6 million, includes existing initiatives, such as the Center for AI Research and the Institute for Data Science — where faculty members and researchers, along with students, study topics such as data analysis and scientific computing — and will apply AI across diverse fields, including architecture, biology, engineering and management, ensuring that AI research benefits multiple sectors. Much of the work is powered by Wulver, NJIT's newest High Performance Computing cluster containing NVIDIA superchips housed in our state-of-the-art colocation facility and developed by NJIT's Information Services and Technology team.

An additional $4+ million investment by NJIT is supporting initiatives that include an expansion of top-tier AI talent at NJIT and the creation of a Center for Educational Innovation Excellence, where experts will study AI's role in enhancing curricula and effective teaching and learning.

This AI push will dramatically boost learner advancement, faculty success, digital transformation and expansion of industry partnerships, all of which are areas of focus within the university's 2030 strategic plan.

"Generative AI is creating new opportunities for innovation and knowledge creation while also challenging the traditional models of R&D and operations," said NJIT President Teik C. Lim. "At the same time, the development of intellectual property and the translation and commercialization of research requires dedicated investment. NJIT will focus its research enterprise on collaborative, large-scale, applied projects in areas of high impact." ■

Predictive Capabilities for a Better Future

From physics and computing to civil and environmental engineering, researchers across NJIT are exploring innovative ways to use AI.

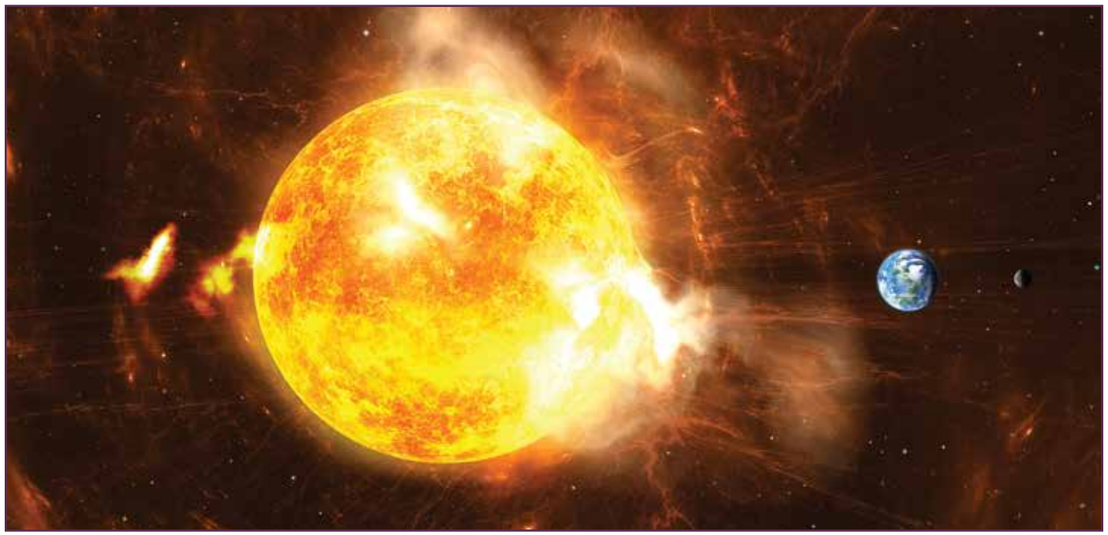

Photo: iStock

BOOSTING EARLY DETECTION OF SOLAR STORMS WITH AI-POWERED FORECASTING

Backed by two major grants, NJIT researchers are developing new ways to predict when the powerful magnetic energy from solar flares and coronal mass ejections (CMEs) will reach Earth, threatening critical infrastructure.

"With better forecasting, we can protect satellite networks and power grids by putting them into safe modes, including shutting off vulnerable equipment," explained Haimin Wang, director of NJIT's Institute for Space Weather Sciences and a distinguished physics professor. "We can also keep humans in space out of harm's way."

In work funded by the National Science Foundation (NSF), physicists and computer scientists are developing AI-powered space weather forecasting capabilities that could yield insights into the complex magnetic processes in regions of the sun's atmosphere that trigger such eruptions, and to this point, have rarely been observed. The new system, called SolarDM, could boost early-warning detection of these eruptions by days.

The NJIT team is leveraging AI to generate synthetic vector magnetograms — computer-generated images of magnetic field dynamics in atmospheric layers below the corona, the chromosphere and the photosphere — to shed light on the precursors to solar eruptions.

The system will be trained using simulations of the sun's magnetic field and observational data from NSF's Synoptic Optical Long-term Investigations of the Sun (SOLIS), one of the world's most advanced solar telescopes for long-term monitoring of the sun, currently stationed at NJIT's Big Bear Solar Observatory. In addition, data from NASA's missions will augment the training set.

With a new $5 million grant from NASA, NJIT's Institute for Space Weather Sciences is launching a research center that will expand prediction capabilities across a broader platform. The new AI-Powered Solar Eruption Center of Excellence in Research and Education (SEC) will partner with NASA, New York University and IBM to further advance AI and machine learning tools for improving the predictability of powerful eruptions at their onset.

"We want to ensure that models not only make accurate predictions but also provide insights aligned with fundamental physical principles," said Bo Shen, SEC associate director and assistant professor of engineering at NJIT.

The center will build a long-term dataset of activity from the sun over several 11-year solar cycles, giving researchers deeper insights into precursors of flares and CMEs and aiding them in developing probabilistic forecasts of these events. ■ *- Jesse Jenkins*

Leveraging AI to Train (Robotic) Dogs

Using a combination of AI and edge computing called edge intelligence, an international collaboration is innovating how a mechanical man's best friend can interact with its owner.

Assistant Professor Kasthuri Jayarajah in the Ying Wu College of Computing is researching how to design a socially assistive model of her Unitree Go2 robotic dog. The aim is to dynamically adapt its behavior, and the nature of its interactions, based on the characteristics of the people with whom it interacts.

The overarching project goal is to make the dog come "alive" by adapting wearable-based sensing devices that can detect physiological and emotional stimuli inherent to one's personality and traits, such as introversions, or transient states, including pain and comfort levels.

The invention will have an impact on home and health care settings in battling loneliness in the elderly population and will be an aid in therapy and rehabilitation. ■ *- Michael Giorgio*

Photo: Deric Raymond

Identifying Railway Defects Before Catastrophe

The high-pitched squeal that trains emit while rounding a curve is the sound of their wheels pressing into wavy indentations in the track caused by repetitive stress. As the grooves deepen, the risk of greater damage and possible derailment accelerates.

The two primary methods for detecting these defects, called corrugation, are deployed infrequently. Manual inspections are labor-intensive and potentially unsafe. Special trolley cars equipped with monitoring equipment can only run at low speeds and are both expensive and disruptive. Neither is suited for regular reconnaissance in urban systems.

Yun Bai, an assistant professor of civil engineering, is proposing an alternative. By placing integrated sensor systems on regular service trains, she aims to provide hourly updates on the state of the track while gathering enough data over time to learn how and where flaws form and evolve. Deformations have a distinctive vibration and noise that sensors pick up; over time, machine learning algorithms will be able to characterize them as to length and depth, for example.

"One of my goals is to extend the life of the track with minimum cost," she explained. "We'd like to determine when we can perform maintenance, rather than reconstruction. We don't always need to replace tracks to fix them."

The trick, particularly in underground subways where GPS is limited, is to match abnormal signals with their place on the track. Bai and her collaborators use positioning technology to do this. It fuses the sensor data with a map of the track based on its geometry – its curves, slopes and turns – that are revealed by a train's acceleration, speed and angular velocity, meaning how sharply it turns. They have developed another algorithm to correct positioning errors, which reduces the drifting errors of the accelerometer sensor. To be of any use, they must pinpoint the signal within 20 meters of the defect.

Based on initial field tests, their technology reduced train positioning errors to 0.5% on average and below 1% in most cases. Bai is focused first on identifying corrugation, but over time, plans to extend the application to other problems, such as broken rail joints and defects in welded joints.

Her goal is not just to produce updated track information, but to understand how problems develop, the factors that contribute to them, and to predict when and how much they will deform. ■ *- Tracey Regan*

Illustration: Courtesy of Matthew Schwartz

Mitigating Threats

Mathew Schwartz, assistant professor of art and design, uses AI in projects ranging from national defense to foot traffic in public spaces.

In a project titled "Real-Time Crowd and Attacker Forecasting for Risk Assessment and Threat Mitigation," Schwartz's team is scanning buildings with LiDAR and converting it to building information modeling (BIM), then running crowd simulation on those 3D models to predict how crowds would react during situations like a terrorist attack or school shooting. He's evaluating building features and recording human metrics to understand what aspects of an environment can impact a person's ability to make a decision on which way to evacuate.

In the future, he plans to use NVIDIA Omniverse in his research, as he's already using it to help architects, interior designers and industrial designers address the challenge of accessibility that they all must consider before constructing a space or product. "The existing common versions of plans are whether you shelter in place, or whether you evacuate. If there's a fire, leave. If there's a shooter, there's instructions like close the door, lock the door or stand in the corner," said Schwartz. "So we're asking, are those always the best tools and are there other things that we could do or should do, given certain information about the event. If we can simulate in real time, someone says, 'There's a shooter right here!' We have a simulation framework in 3D of the model of the building, and it's giving you feedback of what the likely outcome will be and telling you the best route for exiting. It's real time feedback on these environments."

These are multidisciplinary projects, Schwartz noted. "We're working with psychology, in order to understand human behavior," he said. "We're working with computer science students to help implement and develop these simulation frameworks. We do work with digital design because we're taking the tools from digital design such as motion capture.

"We're working with interior design because it's about how we build the environment, in signage, and things like that change the environment," he added. "And we're doing industrial design research on how to design products and make things that will change people's decisions within the environment. So it's a broad scope and multiple disciplines interacting and engaging with all different fields." ■ *- Nayib Morán*

Developing AI-Enhanced Water Safety Testing for "Forever Chemicals" and Microplastics

Photo: iStock

It's estimated that nearly half of all U.S. tap water contains harmful "forever chemicals" and microplastics. At NJIT's Mass Spectrometry Center, chemist Hao Chen and his team are stepping up environmental monitoring efforts for better detection of these threats to public health.

Chen's lab has made significant breakthroughs. In the *Journal of Hazardous Materials*, they revealed a method for detecting "forever chemicals" — technically known as per- and poly-fluoroalkyl substances (PFAS) — in drinking water in just two minutes. They've also recently developed a patent-pending technique for detecting microplastics in seconds.

As the EPA sets new enforceable limits for PFAS in drinking water and is considering similar restrictions for microplastics, Chen's team — including Ph.D. students Md Tanim-Al Hassan, Mengyuan Xiao, Yongqing Yang and Timothy Yaroshuk — is turning to machine learning to make their detection capabilities even more comprehensive.

Chen said that among the most advanced tools for water monitoring currently is mass spectrometry, a lab technique for measuring the molecular composition of sample material that is used in everything from forensic analysis to food safety testing. However, even a single water sample generates vast amounts of high-resolution mass spectrometry data — often hundreds of thousands of data points per sample — making it difficult to interpret and identify thousands of potential contaminants.

To tackle this challenge, Chen's team has partnered with Professor Frank Shih at NJIT's Ying Wu College of Computing. Together, they're developing deep learning models that could lead to a more cost-effective, accurate and accessible testing method for ensuring water safety. The AI-assisted approach could potentially detect previously unknown PFAS compounds, microplastics and their breakdown products.

"Machine learning is particularly effective in handling the complex and multidimensional datasets generated by mass spectrometry techniques to uncover hidden patterns and establish correlations between mass spectrometry data and water quality parameters," said Chen. "By applying machine learning algorithms, we're enhancing our ability to identify pollutants with unprecedented accuracy. This would be a crucial step for rapid response to contamination events and more frequent monitoring of water supplies." ■ *- Jesse Jenkins*

AI-Powered Exoskeleton Enhances Human Locomotion, Helps Restore Mobility

A team of researchers have demonstrated a new method that leverages AI and computer simulations to train robotic exoskeletons that can help users save energy while walking, running and climbing stairs. Described in a study published in *Nature*, the novel method rapidly develops exoskeleton controllers to assist locomotion without relying on lengthy human-involved experiments.

Moreover, the method can apply to a wide variety of assistive devices beyond the hip exoskeleton demonstrated in this research.

"It can also apply to knee or ankle exoskeletons, or other multi-joint exoskeletons," said Xianlian Zhou, associate professor and director of NJIT's BioDynamics Lab. In addition, it can similarly be applied to above-the-knee or below-the-knee prosthesis, providing immediate benefits for millions of able-bodied and mobility-impaired individuals, he said.

"Our approach marks a significant advancement in wearable robotics, as our exoskeleton controller is exclusively developed through AI-driven simulations," Zhou explained. "Moreover, this controller seamlessly transitions to hardware without requiring further human subject testing, rendering it experiment-free."

This breakthrough holds promise for aiding individuals with mobility challenges, including the elderly or stroke survivors, without necessitating their presence in a laboratory or clinical setting for extensive testing. Ultimately, it paves the way for restoring mobility and enhancing accessibility for everyday in-home or community living.

The researchers focused on improving autonomous control of embodied AI systems, which are systems where an AI program is integrated into a physical technology. This work focused on teaching robotic exoskeletons how to assist able-bodied people with a variety of movements. Normally, users have to spend hours "training" an exoskeleton so that the technology knows how much force is needed – and when to apply that force – to help users walk, run or climb stairs. The new method allows users to utilize the exoskeletons immediately. ■ *- Deric Raymond*

Image: Courtesy of Xianlian Zhou

NJIT Engineers Gaze into Robotic Eyes

Image: Adobe Firefly

Machine vision sensors could work faster and more efficiently if they were designed like biological eyes, according to Dong-Kyun Ko, associate professor in NJIT's Electrical and Computer Engineering department. Ko is working with Assistant Professor Shaahin Angizi, who specializes in non-traditional circuit architecture and AI-aided design, on a $467,000 National Science Foundation grant to advance the technology.

Modern machine vision systems, whether in your vehicle or a factory robot, generally incorporate optical image sensors. The sensors convert analog electrical data into virtual snapshots of visual information, which is then shuttled to digital back-end for image processing, one frame at a time. This causes bottlenecks, so the new idea from Ko and his colleagues is to make optical sensors that can perform both sensing and data processing, rather than bogging down a main processor. Sensors would essentially tell processors what they see, whether it's a road sign or factory worker, rather than merely telling the processor that some unspecified object is there to be determined.

"It reduces the amount of visual information that needs to be computed by the brain, making the overall process faster and more energy-efficient," Ko said, adding that pre-processing is just one task that biological eyes conduct in addition to dark adaptation, light adaptation and motion detection.

The new sensors will be based on a material called polycrystalline lead selenide, a semiconductor widely used for low-cost, uncooled systems. It will search for mid-infrared wavelengths, empowering the machine vision system to see through fog, mist and smoke. Such benefits are why mid-infrared sensors are widely used for first responders, the intelligence community, law enforcement and the military, Ko said. Lead selenide also has a property that allows optical sensors to operate at room temperature without cryogenic cooling.

Ko said, "AI will gather all the information from its surroundings, and process it to make a decision. That's what AI does — it learns and tries to make the best decision as fast as possible, and I believe visual information is the key. And I think that's also true for all the other biological systems, too. About 80% of the information we biological organisms gather from the surrounding environment comes from visual sources, and it plays a vital role in our survival." ■ *- Evan Koblentz*

AI Helps Increase Access to Computing for All

Artificial intelligence is becoming a powerful tool for broadening participation in computing (BPC), a community of scholars worldwide seeking increased opportunities for underrepresented groups in computer science and engineering. At NJIT, vital work on AI in BPC is led by Jamie Payton, dean of the university's Ying Wu College of Computing. Payton contributes through her dual roles as principal investigator of STARS Computing Corps and co-principal investigator of INVITE AI Institute, both funded by the National Science Foundation (NSF).

STARS, created during the NSF's original call for broadening participation 20 years ago, is "an alliance of colleges and universities that are committed to promoting student persistence in computing degree programs and broadening participation in computing. Over 70 colleges and universities have participated," Payton explained.

Two of the STARS efforts related to artificial intelligence stand out. One is the AI Scholars program, funded through Payton's current five-year, $5.9 million NSF grant. The program gives college students in computing fields the opportunity to learn about AI, teach what they learn to underserved K-12 students and develop leadership skills. Students can earn course credit and stipends. INVITE, meanwhile, "focuses on creating AI-enabled technologies for use in middle school classrooms to enhance STEM learning outcomes," Payton said. The teaching software they're designing is novel because it uses AI to help students with collaboration, persistence and resilience, and also because it can help students by monitoring their history throughout a course, not just during individual lessons, she explained. INVITE members include more than 40 researchers from nine universities and businesses. Payton's work there comes from an NSF grant of nearly $20 million. ■ *- Evan Koblentz*

Tracking Rainforest Biodiversity

NJIT Biologist Among $10M XPRIZE Competition Winners

Photo: Courtesy Eric Fortune

Late last year, NJIT biologist Eric Fortune and a team of scientists called "Limelight Rainforest" won the XPRIZE Rainforest Competition, securing half of the $10 million prize purse.

The team's victory was the culmination of a global competition that began in 2019, when the nonprofit XPRIZE Foundation challenged innovators to "develop technology to capture the true biological diversity of rainforests… and show the value of protecting the natural resources within them."

Ultimately, Limelight Rainforest and its biodiversity sampling technology, "Limelight," triumphed in a competition that included 300 teams from 70 countries.

Limelight Rainforest forged a drone-based sampling technology under the unique rules of the competition's various stages held in rainforests around the world; teams were challenged to deploy technologies to remotely survey as much biodiversity as possible across 100 hectares of forest accurately, in under 24 hours.

The Limelight team of more than 50 engineers, biologists and indigenous scientists developed its system to collect a flurry of data on species that included ultrasound produced by bats and traces of DNA left by primates moving through the forest. The final competition was held in the Amazon – the most biodiverse place on Earth, estimated to be home to over 10% of the known species in the world.

The latest Limelight uses telemetry, satellite communications and advanced AI to interpret the hundreds of thousands of images, recordings and samples collected by the platform's advanced microphones, cameras and capture systems.

One of Limelight's standout features in the finals was the accuracy of its AI in identifying the vast array of forest life. For that, the team turned to the Quechua and Waorani Indigenous groups native to the rainforests of Ecuador, who reviewed and validated thousands upon thousands of sounds and images of rainforest species. Fortune noted, "We were certain our AI was trained well because we had the world's top experts validating the data that we fed into the AI."

Fortune now is helping lead development of the first generation of Limelight devices for real-world use, partnering with NGOs, Indigenous communities and other organizations invested in rainforest conservation. ■ *- Jesse Jenkins*

Helping Business Harness AI

Left to right, Thomas Villani, vice president for AI and Machine Learning, NJII and Jeff McSweeney, data strategy and innovation specialist, NJII.

Thomas Villani is used to small business leaders looking for answers, but he likes to start by asking them a question: "What are you surprised has not yet been automated?"

As the vice president for AI and Machine Learning at the New Jersey Innovation Institute (NJII) – NJIT's nonprofit corporation – Villani said many smaller firms see the potential of AI, but that doesn't mean they know how to seize the opportunity. The new AI Lab at NJII, which Villani leads, is aimed at helping businesses take advantage of the technology. "NJII is uniquely positioned to help," Villani said. "We can run a proof of concept for a small- to medium-sized business. Our focus is on the practical side, because the business value for AI is not always immediately clear."

Since launching, Villani said the lab has learned some larger firms also are eager for guidance when it comes to AI. "There are a lot of opportunities in civic, governmental and healthcare IT work," he said.

NJII is working with multiple New Jersey startups in online retail and clinical diagnostics, and discussions with Hackensack Meridian Health about developing several AI tools for use in the hospital are ongoing.

One benefit of NJII's AI "solutions-as-a-service" model is that subject matter experts within both NJII and NJIT – including students interns from the Ying Wu College of Computing (among the largest computer science programs in the tri-state area) – can all be leveraged. NJII assists with assessing, identifying, designing and implementing AI solutions that fit a firm's needs.

NJII also is exploring semi-structured data analysis of healthcare data with AI. The New Jersey Health Information Network, developed and managed by NJII's Healthcare Division, enables the electronic exchange of patient health information across the state. The organization has enrolled more than 36,000 providers to date, and securely houses and manages more than 14 million patient records in its Master Patient Index. Now, NJII is helping hospitals predict same-day cancellations and exploring other work, such as predicting rates of sepsis.

"There is a lot of room to clean and better format the databases used by hospitals, which often have multiple systems," Villani said. "If NJII can help these institutions use more modern architecture in the back end, then AI can serve as a pivot point so the hospitals can be more effective – and NJII can make sure ethical considerations are interjected into the process."

NJII also is engaged in applying language models that can help with document analysis. One example is GrantMiner, which Villani built to help researchers find state grants more easily. Not only does it collect data, but it can help applicants write their grants, especially the boilerplate sections.

And NJII is collaborating with the Bergen County Prosecutor's office, doing image/video analysis of police body cameras. Bergen County has 71 municipalities, which means terabytes of data have poured in. NJII is currently annotating the videos and training AI to better know which videos should be flagged for review.

"It's a potential gold mine of information," Villani said. "We can identify points of interest and prioritize what videos to view, because it is not possible to view them all – and state audits also require that a percentage be reviewed."

Villani also noted that police departments can't work with for-profit companies, but they can collaborate with NJII because it is a nonprofit. "We can also insert ourselves and make sure people understand the ethics and second order effects of AI."

"This comprehensive AI strategy leverages the unique assets of NJII and NJIT to drive AI innovations, and positions New Jersey as a leader in the AI field," said NJII President Michael Johnson. ■ *- Theta Pavis*

Classroom Tools & Deep Learning

M.S. in Artificial Intelligence students in class at NJIT at Jersey City.

The impact of AI at NJIT is not confined to the research realm or to partnerships with government and industry. It is being felt in the classroom as a generational learning tool. "It's going to be around, it's not going anywhere — so how do we best help our students learn to use it wisely? How do we, as educators, use it and integrate it into what we are doing," said NJIT Vice President and Dean of Students Marybeth Boger at a university town hall event. "If we make it into this big monster, I can tell you, [students] are going to use it in all the wrong ways. How are we going to help students learn to use it in a wise manner? That's the goal."

"Any technology tool must be used for the right reasons and objectives," Senior Vice Provost for Research Atam Dhawan added. "If it is used appropriately and responsibly, it could help in learning and research positively as an incredible resource. But we need to be careful about the use of misleading or inaccurate information and biases in the process."

In many cases, public artificial intelligence platforms, such as ChatGPT, also are being deployed by faculty as a revolutionary classroom tool. "AI has been here, it is here and will be here," said Justine Krawiec, director of learning technologies in NJIT's Office of Digital Learning. "It's just getting more advanced, and we're seeing that in a number of different places. We're looking into ways that we can leverage that technology and prepare students for the workforce that they're going to be in, rather than limiting their access to it. We're training students for many jobs that might not even exist at this point."

Dean Moshe Kam explained, "Students and researchers in the Newark College of Engineering build, validate and test artificial intelligence systems using tools such as machine learning, neural networks, deep learning, computer vision algorithms and natural language processing. Applications cover a wide spectrum of objectives, including automatic software generation, robot navigation, stability analysis of dynamic systems, synthesis of control for large scale systems, pattern recognition in large data sets, hypothesis systems, detection and estimation."

The Albert Dorman Honors College has an endowed honors faculty fellowship, the Matthew J. Hill Honors Faculty Fellowship in Ethics and the Digital Future, that is held by Assistant Professor Amy Hoover, who is teaching honors sections on generative AI. At the Jordan Hu College of Science and Liberal Arts, Assistant Professor Michael Laudenbach researches how to digitally identify attributes of human writing compared to writing from AI's language models. Finding AI lacking as a writing tutor, he'd like educators to set an example by using less of it. AI is similarly catching on in Hillier College of Architecture and Design. "We are just starting to experiment with various AI tools, particularly in the context of design — visual and storytelling," Associate Professor Andrzej Zarzycki said.

Meanwhile, at the Martin Tuchman School of Management, AI is vital to the new sports data analytics program, and there's an AI for Business Decisions course. Students were already learning how to use AI for customer service and data analysis before ChatGPT came along in fall 2022. That course is just one where artificial intelligence itself is the star.

In the Hu College, there's Philosophy Seminar in AI Ethics, Historical Problems Through Film: Artificial Intelligence in the Modern World, Artificial Intelligence and Ethics, and AI and the Human Mind. And there are a plethora of courses that cover AI topics as part of the curriculum. These courses are all in addition to the offerings at the Ying Wu College of Computing, which has Introduction to Artificial Intelligence for undergraduates, along with an entire master's degree in AI. Undergraduates are getting in on AI research, such as data science alumna Vaisnavi Nemala, who presented her paper on personalized machine learning models at a prestigious ACM conference in England.

THE AI SANDBOX

While several thousand students are learning about AI and related topics in classrooms and laboratories, industry partnerships are vital to these programs. NJIT's work with Amazon Web Services (AWS), for example, explores cloud use cases and impacts to teaching, learning, research and student success. The partnership supports NJIT by providing a Generative AI sandbox environment where students, faculty and staff can develop proof of concepts in a collaborative, secure and highly scalable environment. NJIT also has longstanding relationships with Dell and NVIDIA as research partners to explore use cases for high performance computing, digital twins, computer vision and more. Through partnerships with leading technology organizations such as these, NJIT's community members are equipped with the best-in-class technologies to explore nearly any use case leveraging AI.

Furthermore, NJIT and its technology partners plan to co-create AI tools that promote social good in and out of the education and research environments. In fact, several NJIT faculty and researchers have been accepted into the NVIDIA Deep Learning Institute Ambassador program.

Bolstering all this work, Senior Vice President and Provost John Pelesko and Vice President for Digital Strategy and Chief Information Officer Ed Wozencroft recently formed an AI Teaching and Learning Working Group to develop and share specific strategies of NJIT's use of AI in multidisciplinary coursework, encouraging the use of AI and recognizing diverse use cases and concerns. Additionally, the Information Services and Technology team has introduced many new AI-based teaching and learning tools, including a recently built XR-lab, where NJIT's digital learning team works with faculty to infuse AI and Extended Reality into the relevant engineering and science curricula. The goal is to deploy the tools ubiquitously throughout NJIT.

"There is no doubt that artificial intelligence is going to impact every aspect of higher education," Pelesko observed. "At NJIT, our goals include training the next generation of AI researchers, preparing all students for using AI in their careers and being at the forefront of utilizing AI to deliver an even higher-quality educational experience." ■ *- Evan Koblentz*

New Faculty Exploring AI

Yun Bai, assistant professor of civil and environmental engineering, applies state-of-the-art technologies in AI, smart sensing, data science and operations research to address management problems of transportation systems and infrastructure. She is currently developing a technology based on intelligent data fusion from train onboard sensors to detect track defects.

Zhifeng Kou, associate professor and associate chair of biomedical engineering, is a translational neuroscientist and physicist who develops novel imaging and AI technologies for brain diseases. His technologies improve detection and outcome prediction for brain injuries. He designs medical devices to make brain surgery safer and easier.

Hye Yeon Nam, associate professor of design, is a digital media artist and human-computer interaction researcher exploring how technology can enhance our cohabitation with other agents — humans, robots and nature. She created drawings with embodied AIs, designed a bench based on sound waves and created a living plant interface for collaborative music-making.

Plavini Punyatoya, assistant professor of digital marketing, specializes in digital marketing strategy, online consumer behavior, marketing strategy, technology innovations, AI acceptance, branding and sustainable consumption. Her research broadly focuses on understanding how marketing decisions can positively influence consumer behavior and improve firm performance.

Lingxiao Wang, assistant professor of data science, explores a broad spectrum of artificial intelligence and machine learning, with a focus on privacy and security in machine learning; multi-distribution learning, where multiple parties, such as hospitals, collaborate to build a machine learning model while respecting each party's privacy; and foundation models.

Chenxi Yuan, assistant professor of informatics, deploys artificial intelligence for social good. She develops generative AI models that facilitate precision medicine and improve health outcomes equitably. Her models generate complete medical data, such as magnetic resonance imaging and electronic health records, for underrepresented populations in order to discover patterns and other insights.

- Tracey Regan

Degrees

NJIT'S ONLINE MASTER'S IN AI RANKED AMONG NATION'S BEST
The Online Master of Science in Artificial Intelligence program offered by the Ying Wu College of Computing has been ranked No. 21 in the nation by MastersInAI.org. The program earned recognition for its strong performance in key areas such as affordability, research output and graduate outcomes.

CERTIFICATE IN ARTIFICIAL INTELLIGENCE
This certificate offers students an introduction to the rapidly expanding field of artificial intelligence. The need for qualified AI engineers and analysts to meet the increasing demands of a global ecosystem has steadily increased by 32% since 2019. Credits earned in the certificate may be applied to the M.S. in Artificial Intelligence.

AI LITERACY MICROCREDENTIAL
Providing foundational knowledge and skills, the AI Literacy Microcredential is designed to ensure that graduates are AI-literate, ethical in AI use and capable of leveraging AI tools effectively across various disciplines. Launched through NJIT's Learning and Development Initiative, the microcredential features 10 non-credit two-hour courses and will be available free of charge to all NJIT students, regardless of level and major, and to the general public for a fee. The microcredential is based off of the NJIT-developed AI Core Competencies developed by a multidisciplinary team of experts.

AI SHORT COURSE
NJIT's Learning and Development Initiative also offers a five-week AI Prompting Certificate course where continuing education students can learn strategic skills to excel in AI prompting.

Q&A with David Bader

Distinguished Professor, Data Science

AI and Society *A conversation with David Bader*

Q: A lot of people who are information workers are afraid that AI will make their careers obsolete. Technological progress can't be stopped, so how should people adapt?

A: In the face of technological progress, particularly with the rapid advancement of AI, it's understandable that information workers may feel apprehensive about the future of their careers. However, rather than viewing AI as a harbinger of obsolescence, it's crucial to see it as a catalyst for evolution and innovation in our work practices. The key to adapting is in embracing these technologies, learning to work alongside them, and leveraging their capabilities to enhance our own skill sets and productivity. The first step in this adaptation process is to cultivate a mindset of lifelong learning. As AI and other technologies continue to evolve, so too must our skills and knowledge. This means staying informed about new technologies, seeking out educational opportunities, and being open to acquiring new competencies that complement the capabilities of AI.

For instance, developing skills in data literacy, AI ethics and understanding the principles of machine learning can make workers more versatile and valuable in an AI-integrated workplace. Additionally, it's important to focus on the uniquely human skills that AI cannot replicate, such as creativity, emotional intelligence and critical thinking. By honing these abilities, workers can ensure they remain irreplaceable components of the workforce, capable of tasks that require a human touch, from complex decision-making to empathetic interactions with customers or clients.

Q: Other than creative prompt-making, what should non-programmers learn now about AI?

A: For non-programmers looking to delve deeper into AI, understanding the ethical implications and societal impacts of AI is paramount. It's important to be aware of how AI decisions are made, the potential biases in AI systems, and the ethical considerations of AI use. Additionally, developing data literacy is crucial, as it enables individuals to evaluate AI outputs and understand the importance of data quality and biases. A basic grasp of AI and machine learning concepts, even without programming skills, can demystify AI technologies and reveal their potential applications. Staying informed about AI advancements across various sectors can also inspire innovative ideas and foster interdisciplinary collaborations. By focusing on these areas, non-programmers can contribute meaningfully to the AI conversation and its future direction.

Q: There's a popular sci-fi plot where the computers get so smart that people lose control. The new class of user-friendly AI is certainly making people excited but also nervous. Should we be afraid?

A: The emergence of user-friendly AI technologies has indeed brought this conversation into the mainstream, highlighting the balance we must strike between harnessing the benefits of AI and addressing valid concerns about its implications. It's critical to recognize that the AI technologies we're creating today are built with numerous safeguards, are subject to ethical guidelines, and operate within evolving regulatory environments. These measures are designed to ensure AI systems augment human abilities and decision-making, rather than supplanting or undermining human control.

While it's natural to harbor concerns about the rapid progression of AI, allowing fear to dominate the discourse would be a disservice to the potential benefits these technologies can offer. Instead, this moment calls for proactive engagement with AI, an investment in understanding its inner workings, limitations and the ethical dilemmas it presents. By advocating for responsible AI development, emphasizing education and promoting transparency, we can foster an environment where AI serves as a tool for societal advancement. This approach ensures that we remain at the helm of AI's trajectory, steering it towards outcomes that uplift humanity rather than scenarios that fuel dystopian fears.

Q: You and your peers at the Institute for Data Science (IDS) are known for researching the building blocks and tools that help make AI infrastructure possible. Specifically, what would you say are IDS' most important contributions so far?

A: The Institute for Data Science at NJIT has made groundbreaking contributions to graph analytics and high-performance computing through the development of Arachne, a sophisticated and open-source framework for processing massive-scale graphs. At its foundation, Arachne implements a hybrid edge list and adjacency structure that revolutionizes how large-scale graphs are processed. This architectural innovation represents a significant leap forward in handling the complexities of large-scale network analysis.

Beyond its technical architecture Arachne has demonstrated remarkable versatility in real-world applications. In cybersecurity, it enables rapid detection of emerging threat patterns through its pattern matching capabilities. The framework's ability to track community structure and identify anomalies has proven valuable for social network analysis, while its high-performance processing has enhanced financial fraud detection systems. These advances in graph processing highlight IDS' broader contributions to high-performance computing.

The significance of these contributions extends beyond their immediate applications. As artificial intelligence systems increasingly rely on graph-based representations for processing complex relationships, the optimizations and algorithms developed at IDS, particularly through Arachne, have become fundamental to making these systems more practical and scalable. Their work continues to bridge the gap between theoretical computer science and practical applications, enabling the next generation of AI infrastructure through innovative approaches to graph processing and high-performance computing.

Q: Some of your own research focuses on democratizing supercomputing power. Can that help lead to another approach for AI equal access?

A: The concept of democratizing supercomputing offers intriguing possibilities for expanding AI access. When we consider how democratized supercomputing could influence AI development, several key pathways emerge. Fundamentally, the process of making high-performance computing more accessible to diverse researchers and institutions, rather than concentrating it among elite organizations, could reshape how AI capabilities develop and spread.

As supercomputing becomes more widely available, smaller organizations and independent researchers gain the ability to train and run AI models without massive capital investments in dedicated hardware. This democratization creates opportunities for innovation from previously excluded participants in the AI development landscape.

However, the path to democratized AI through supercomputing faces several significant challenges. Computing power, while crucial, represents just one element in the complex ecosystem of AI development. Equal consideration must be given to data access, technical expertise and algorithmic innovation. The environmental impact of distributed supercomputing systems requires careful assessment, particularly regarding energy consumption. Additionally, any distributed computing approach to AI development must address robust security and privacy protections.

This intersection of democratized supercomputing and AI access highlights broader questions about how we can make artificial intelligence technology more equitable and accessible while maintaining necessary safeguards and standards.

Q: How does supercomputer democratization impact the overall work of the Institute for Data Science?

A: The rise of user-friendly artificial intelligence systems like ChatGPT marks a pivotal moment in our pursuit to democratize data science and supercomputing. For my work, this evolution serves as both a tool and a testament to the power of making complex computational capabilities accessible to a broader audience. It enriches the palette of methodologies and technologies at our disposal, enabling us to tackle more ambitious projects with greater efficiency and creativity. By integrating these AI systems into our research and educational programs, we're not just enhancing our ability to process and analyze data, we're also empowering students and researchers with the means to innovate and explore new horizons in data science without being hindered by the technical complexities that once acted as barriers. For the Institute for Data Science, the impact of such AI systems is transformative. They serve as a bridge between advanced computational technologies and a diverse range of disciplinary domains, facilitating interdisciplinary research and collaboration.

Q: A new model from China, called DeepSeek, seems to be as good as Western models but has far lower costs and technology requirements. How did they do it, and what can Western companies learn from this?

A: DeepSeek's emergence represents a significant challenge to established thinking about AI development. While Western companies have typically pursued AI advancement through massive computational resources and extensive funding, DeepSeek has demonstrated that remarkable results can be achieved through more efficient methods and careful engineering. The company's approach centers on targeted reinforcement learning focused specifically on reasoning tasks, rather than the broader supervised learning methods common in Western models. They've developed an innovative rule-based reward system that actually outperforms traditional neural reward models, while using significantly fewer resources. Perhaps most impressively, they've managed to compress advanced capabilities into relatively small models, achieving with 1.5 billion parameters what others do with far larger models.

The financial implications are striking. DeepSeek developed their R1 model for less than $6 million, a fraction of the hundreds of millions typically spent by Western competitors. They've translated this cost efficiency into their pricing model, offering services at $0.55 for input and $2.19 for output per million tokens, substantially undercutting market rates while maintaining comparable quality.

This success suggests that the future of AI development might lie more in clever engineering and efficient methodology than in raw computational power. It challenges the assumption that advanced AI development requires massive resources and suggests that innovative approaches to training and model architecture might be more important than sheer scale. The success of DeepSeek also suggests that competitive advantage in AI might come from unexpected directions, and that the barriers to entry for significant AI advancement might be lower than previously thought. It's a reminder that technological breakthroughs often come not from doing things bigger, but from doing them smarter. ■ *- Evan Koblentz*

Photo: Deric Raymond

High Performance Computing for Better Research

Left to right: Daniel Fuentes, senior VP of DataBank, NJIT President Teik C. Lim, Gedaliah Wolosh, director, High Performance Research Computing, Research & Computing, and Kevin J. Walsh (pointing), assistant director Advanced Computing Infrastructure, during a visit to NJIT's high performance computing (HPC) environment at DataBank's Piscataway, N.J. data center. The HPC environment supports NJIT's research efforts and was created through a partnership with DataBank, a leading provider of enterprise-class colocation, connectivity and managed services. Built by Dell, the HPC environment, named Wulver, provides a total of 127 compute nodes or servers, each with two AMD EPYC 64-core processors and 512GB RAM. ■

Faculty Contribute to State AI Task Force

Distinguished Professors David Bader and Guiling "Grace" Wang, along with Professors Cristian Borcea and Vincent Oria in the Ying Wu College of Computing (YWCC), served on Governor Phil Murphy's AI Task Force. Comprised of industry leaders, academic experts, consumer advocates and government innovators, the group worked to establish programs, trainings and tools that will advance New Jersey's leadership in AI.

Recommendations by the task force were published in "The Report to the Governor on Artificial Intelligence," which aims to create economic opportunities for residents and businesses, encourage ethical use of AI technologies, promote equitable outcomes, support public and private workforces and improve government services and citizen experience.

The YWCC faculty members each contributed to primary working groups in four areas: security, safety and privacy considerations for AI use cases; workforce training, jobs of the future and training public professionals; AI, equity and literacy; and making New Jersey a hub for AI innovation.

Recommendations included ways to expand opportunities for AI education and literacy, promote a strong workforce and AI talent pipeline, address biases and discrimination, foster a collaborative AI innovation ecosystem and economy across the state, and bolster the state's use of GenAI to support policy outcomes and improve the resident experience.

In addition to his work with the state, Bader serves on other boards, including on the Computing Research Association. In addition, he is a scientific advisory board member for the Flatiron Institute, Simons Foundation; an advisory board member for ARLIS at the University of Maryland and steering committee chair for the Seed Fund at the Northeast Big Data Innovation Hub.

Wang, the director of NJIT's Center for Artificial Research, serves as a technology expert for a state committee aimed at helping judges and lawyers understand AI's role in the legal system. The New Jersey State Court Artificial Intelligence Committee is examining potential policies and practices in numerous areas, and Wang is the sole academic appointed to the committee of 31 members. Wang also has been named to serve as an AI subject matter expert for the Department of Homeland Security's Science Advice and Guidance for Emergencies Program, where she may be called upon by the DHS Chief Scientist to provide counsel during national emergencies. ■

NJIT Awarded in State's Pilot Global Entrepreneurs-in-Residence Program

The New Jersey Office of the Secretary of Higher Education announced awards to two institutions of higher education under the state's pilot Global Entrepreneurs-in-Residence program. With a targeted focus on driving innovation and entrepreneurship in the field of generative AI, this economic development initiative leverages NJIT and William Paterson University to create pathways for international entrepreneurs to stay in the state to grow their startups. ■

YOUNG ALUMNI

SOAR AT INTERNATIONAL FIRM

By Evan Koblentz

Mike Reagan leads 250 people for the New York/New Jersey region of the international technology consultancy CGI Inc., and four of his newest hires are Highlanders who impressed him. The four – representing NJIT's Martin Tuchman School of Management, Newark College of Engineering and Ying Wu College of Computing – recently shared insights into their early career experiences, lessons learned from college and advice for students who desire the same success.

"They have risen to be the cream of the crop," said Reagan, senior vice president, who's an electrical engineer and transitioned into management. "What I do not hire is someone with a resume of 4.0 and nothing else. Give me the 3.2 who was part of a couple of clubs, involved in student government and has a personality."

CGI is one of the largest IT and business consulting services firms in the world. NJIT alumni and CGI employees (left to right): Nirav Rana, Jesslyn Gutierrez, Nada Aly and Sheyeanne Powell.

NADA ALY '22
B.S. COMPUTER SCIENCE

Aly, from the Colonia section of Woodbridge, made an effort at NJIT to learn unique skills. She studied Microsoft's C# language, in the context of game design, with Assistant Professor of Informatics Margarita Vinnikov. She also learned about legacy COBOL code by taking CS-210, Technical History of Computing. She never expected to use either language in the workforce. But at CGI, she found herself using C# as part of SQL Server Integration Services, and she helped translate a client's COBOL into modern formats, impressing her client by simply having heard of it. "He was shocked … there were a couple of times where I caught things that he didn't," she said.

Technology aside, Aly has a love of culture. She was a member of the NJIT art club and said she'd love to someday work in a CGI field office in France or Morocco.

JESSLYN GUTIERREZ '21
B.S. BUSINESS ADMINISTRATION

At CGI, Gutierrez began in operations and transitioned into business analytics. "Much more of gathering information, reporting, analyzing and then working alongside clients," she explained. One of her clients, for example, is the City of New York. She's helping to implement and test a financial project tracking system. "Currently, what I'm doing is testing. I've been doing test scripts, and validating those test scripts. Right now we're in the user acceptance phase … making sure everything's good for deployment."

"I do enjoy having studied management information systems at NJIT because I like the communication side and having to explain the technology," she noted. "NJIT gave me the foundation of how you do this and how to take it into your job."

> **"NJIT gave me the foundation of how you do this and how to take it into your job."**
>
> - Jesslyn Gutierrez

Gutierrez grew up in Perth Amboy and transferred to NJIT from Middlesex College. She understood the importance of diligence and dedication from her NJIT data science professor, Ai Chih (Jasmine) Chang, adding, "She was very patient and thorough with her teachings and always had her student's success in mind as the end goal."

Looking back, "I had a couple of challenges getting through the programming classes. I know they can be a little intense and stressful. One of my biggest regrets that I do recommend doing now is definitely taking advantage of office hours. They're there for a reason, and professors aren't as scary as it seems … I think I was more on the shy side while I was in school, and sometimes you've just got to put that to the side, and take advantage of their willingness to help."

"Lately I've wanted to get back to NJIT and see what I can give back to the [Martin Tuchman] School of Management, if it's mentorships or anything like that."

SHEYEANNE POWELL '22
B.S. INFORMATION TECHNOLOGY

Powell needed to learn C# for her job, but had not already done so in college. However, "At NJIT, because I had the foundations and the basics of coding, being able to apply different syntax, I was able to pick that up," the Hillside native said. She said that this approach to learning, along with human networking skills, were the most important things she learned in college.

Another real-world skill she learned in college, which she finds herself constantly remembering at CGI, is to trust a program's error messages. "When it comes to bug-solving, error messages are notes from the developers to you," she said, recalling a lesson she learned from Senior University Lecturer D.J. Kehoe, who teaches game development courses.

All software developers know multiple programming languages, but Powell is also passionate about spoken language. "I'm currently learning Japanese, but I hope to learn a handful of other languages as well," she said, citing French, Mandarin, Spanish and possibly Korean. She dreams of staying with CGI and working in Japan as a full-stack developer. She also loves to cook, knit and play violin.

For current students, "My advice would be to take advantage of the opportunities that you have to receive help and guidance, such as office hours from professors and different resources on campus. I definitely made full use of that. I feel like it sets you up for success."

NIRAV RANA '21
B.S. COMPUTER ENGINEERING

Computer engineering is a major associated with hardware, but graduates tend to become good programmers because they know both sides of the equation. That's the case with Rana, from Parsippany. He received a message from a CGI recruiter via NJIT's Handshake career service. "So now I'm a software developer, and I do work for Westchester County. They are in the process of upgrading their HR software to one of our products, and I'm helping out with that process," Rana said. "It consists mainly of working with Microsoft Power BI, used to create dashboards and analytics."

Rana programs in C, JavaScript and SQL. He didn't know Power BI, but he used OpenAI's ChatGPT and Microsoft Copilot to quickly learn the necessary steps. He also hadn't taken a database course, but learned enough about joins and subqueries in other classes that he found it easy to pick up SQL anyway.

"Being a CE major, it's tough, there's no easy way to get your degree. There's a lot of hard classes, but the one thing that I would wish I did more of is just pay attention in the class, not just taking notes, but asking questions. I know no one wants to sit in the front of the class. But sit in the front of class, all right? Because that's when you're forced to pay attention. You hear everything clearly, and if you have a question, just speak up. I found that learning the material that way is just so much better."

MORE WORK WITH NJIT

Reagan intends to continue working with NJIT beyond just hiring its graduates. For example, he said CGI is backing up NJIT's New Jersey Innovation Institute to help its government clients learn how to use artificial intelligence. CGI attends NJIT career fairs, while Reagan himself works closely with Executive Director of Student Entrepreneurship Kathy Naasz, and sits on the boards of Choose New Jersey and the New Jersey Business and Industry Association with university President Teik C. Lim.

Reagan is also a fan of hiring college interns, and even having the interns teach high school students. "The goal is to hire more and more NJIT students because they're well-prepared," he said.

He's just as happy if students decide consulting is not for them. "Do what your passion is," Reagan advised. "If you want to be an engineer, be the best engineer you can be. And then from there, map out what you want to do with that career. I look at internships this way. It's a two-way interview. When you intern at CGI, we're interviewing you throughout the summer. But you should be interviewing us. Is this where you want to be? I've had plenty of students say, 'I was here for the summer. I'm not going to be an engineer. I'm going to go into business, because this internship opened my eyes to do what I really want to do for the rest of my life.'" ■

1950s

DAVID FERRUZZA '58 had a 22-year Air Force career including teaching at the United States Air Force Academy and assignments in England and Germany. At Elizabethtown College, he played a key role in growing a now vibrant engineering major up to ABET accreditation standards.

1960s

WILLIAM MASCHARKA '64 CEO of Frazier Industrial Company, received the Industrial Leader in Structural Steel Award in Ernst & Young's 2024 Entrepreneur of the Year awards. The recognition is considered one of the preeminent competitive business awards for entrepreneurs and leaders of high-growth companies who are creating a more equitable, sustainable and prosperous world for future generations.

1970s

BRIAN KIERNAN '70 has been named a Fellow of the National Academy of Inventors. This honor recognizes his pioneering contributions to mobile and fixed wireless communications, a field he revolutionized through innovations that underpin technologies used by billions globally.

DIETER WEISSENRIEDER '76 received the Lifetime Achievement Award at the New Jersey Immigrant Entrepreneur Awards. These awards celebrate the remarkable achievements of immigrant business leaders who have significantly contributed to New Jersey's economy.

KENNETH M. COLAO '77 was inducted into the National Academy of Construction on August 19, 2024.

CARLOS OLIVER '77 president of Frazier Industrial Company, received the Industrial Leader in Structural Steel Award in Ernst & Young's 2024 Entrepreneur of the Year awards. The recognition is considered one of the preeminent competitive business awards for entrepreneurs and leaders of high-growth companies who are creating a more equitable, sustainable and prosperous world for future generations.

1980s

ROBERT COHEN '83, '84, '87 chair of NJIT's Board of Trustees and president of Digital, Robotics and Enabling Technologies at Stryker, has been inducted as a Fellow of the National Academy of Inventors. This prestigious honor recognizes Cohen's prolific, innovative and groundbreaking contributions to the medtech field and academia.

PAUL MANZ '84 chief technology officer, Joint Program Executive Office for Armaments and Ammunition, received the Department of the Army Distinguished Civilian Service Medal for Exceptional Civilian Service, the highest civilian award from the Secretary of the Army. Recognized for championing, leading and delivering innovative precision weapon and munition overmatch capabilities, he was named "Father of Munition-Deployed Navigation Warfare." Manz has four decades of distinctive civilian service within the Department of Defense and holds numerous patents.

CHRISTINE M. MCKIERNAN '87, '90 has been named chief technical officer at Bioenergy Devco, focusing on all technical aspects of engineering and construction related to the company's current operating facilities and future growth projects.

RANJIT B. PRADHAN '88 was promoted to senior vice president of Sales and Marketing at American Shared Hospital Services.

JORDAN HU '89 was named Immigrant Entrepreneur of the Year at the New Jersey Immigrant Entrepreneur Awards. These awards celebrate the remarkable achievements of immigrant business leaders who have significantly contributed to New Jersey's economy.

1990s

KHATIB ABDELAZIZ '90 received the HealthTrust 2024 Member Recognition Award for Operational Excellence at Virtua Health System for accelerating value and efficiency across its five-hospital health system. This included revamping warehouse operations by minimizing inventory redundancies, reducing expired inventory and standardizing product lines. The improvements resulted in increased efficiency, resiliency and streamlined workflows.

VIVIANNE ARENCIBIA '91 Vice President of Global Quality Systems and Compliance at Moderna, has been elected as vice chair of the 2024-2025 International Society for Pharmaceutical Engineering International Board of Directors.

LEON BAPTISTE '91 is a recipient of a 2024 NJBIZ ICON Award, which recognizes leaders over the age of 60 who represent industries across New Jersey. Recipients are honored for their work throughout their careers — not just in their respective fields, but in the state's larger business community as well.

AJAYKUMAR GAMI '91 chief commercial officer of Lummus Technology, was a finalist for the Energy Leader of the Year Award at the Gulf Energy Information's Energy Excellence Awards. Lummus Technology received the Licensor of the Year award for its success in expanding its portfolio to meet current energy needs, ensure economic viability and address environmental imperatives. Lummus also won the Best Petrochemical Technology award for TC2CTM, which converts crude oil into high-value petrochemicals.

THE HONORABLE PAUL A. SARLO '92, '95, '22 HON was inducted into the National Academy of Construction on August 19, 2024.

NELLY JEFFERSON '94 was named chief information officer at Avangrid, Inc.

MICHAEL EDWARDS '95, '01 has been appointed president, markets at Prime Therapeutics, LLC/Magellan Rx Management.

KEITH M. CHINCHAR '97, '05 was named general manager of Smart Streetlighting at Ubicquia, Inc.

TOMAS PORTURAS '97 vice president, Social Impact and Sustainability at Wells Fargo, was named as one of ROI-NJ's ROI Influencers: People of Color 2024.

MARTIN J. BOYD '98 was appointed as chief marketing officer for Big Lift, LLC.

VASANTHI RAMESH '98 has been elevated to managing director of India operations for NetApp. The new role is in addition to her existing role as vice president, Engineering, Unified Manageability Framework.

KIRTHIKAR ANANTHARAM '99, '06 has been appointed as Sierra7's chief strategy and technology officer.

IVORY C. WILLIAMS '99, '01, vice president of STEM Education at Liberty Science Center, was named as a New Jersey STEM Pathways Network I CAN STEM New Jersey Role Model in July 2024.

2000s

LEROY JONES '00 chair of the New Jersey Democratic Party, was listed as one of ROI-NJ's ROI Influencers: People of Color 2024.

FENG-MING TSAI '02, '09 has been appointed chairman of Taiwanese shipowner Yang Ming Marine Transport.

JONATHAN ECHEVERRIA '03 has joined Scotiabank as managing director & SVP responsible for Technology Risk Transformation, supporting the strategic priorities and oversight of Enterprise Technology Cyber, IT Risk and data protection globally.

SUNIL MEHTA '03 was hired as director – Automation at Precis Engineering + Architecture in its Cary, N.C. office.

MARJORIE A. PERRY '05, '24 HON CEO and president of MZM Construction & Management, was inducted into the National Academy of Construction on August 19, 2024. Perry was also listed as one of ROI-NJ's ROI Influencers: People of Color 2024.

SAURABH K. JOSHI '06 has been named president of Payments at CSG.

2010s

KEVIN L. DUDLEY '10 vice chairman of CBRE and **ADAM FINKLE '15**, project manager at SSP Architects, were named to the NJBIZ Forty under 40.

JANANI RAMKUMAR '10, '11 vice president of Operations at CS Energy was listed on NJBIZ's 2024 NJBIZ Leading Women in Business list.

MOHAMED KHALIL '12H vice president of Strategic Investing and Portfolio Management at Mastercard is one of the 100 leading corporate venturing professionals in Global Corporate Venturing's 2024 Powerlist.

CHAO YAN '13, '18 a co-founder of Princeton NuEnergy with **PENG ZHAO '13**, has been named one of *Business Insider*'s Climate Action 15 for 2024 – a list highlighting global leaders deploying innovative solutions to combat the climate crisis. Yan was also listed as one of ROI-NJ's ROI Influencers: People of Color 2024.

EL HOUCIN HOUSSAM '16 has been recognized as a County Teacher of the Year 2024-2025 by the New Jersey Department of Education.

2020s

NIKOLA SPASOV '21 construction manager and partner at Community Builders NJ, Inc., was named a "Rising Star" as part of the NJBIZ Forty under 40. This designation recognizes individuals who are 29 or younger with seven years or less of experience and show extreme potential to be an industry leader in the next few years.

AUSTIN RILEY '22 has been hired as an associate director in the surveying department of Jersey City-based land-use consultancy Dresdner Robin.

MEGHAN FLYNN '23H presented a lecture titled "Dive into Web Accessibility with JAWS" at the 2024 Grace Hopper Celebration in Philadelphia. JAWS is a desktop screen reader application that enables visually impaired users to read the screen with a text-to-speech output.

AIDAN KIDD '24 former NJIT left-handed pitcher, has signed a professional contract to play with the Chicago Dogs of the American Association of Professional Baseball, an official MLB Partner League.

The alumni office wants to hear from you! Send your Class Notes to alumni@njit.edu.

IN MEMORIAM

James M. Alexander '58
Harry C. Applegate '89
Iya Bekondo '15
Edward J. Bodek '51
George E. Bonaduce '67
Joseph P. Bonner '97
John R. Bonscher '62
James P. Boyle '58
Richard L. Braun, Sr. '64, '74
Ronald J. Bruniger '65
Fred M. Bruno '47
William R. Buck '51
George W. Burker '56
Peter J. Burton '77
Victor N. Carless '88
Gregory J. Cecere '68
Lawrence R. Chaya '98, '04
Joseph J. Chikowski '93
Joe Chimento '11
Harry Chin '58
Eric J. Christiansen '66
Richard Cimera '70
Donald G. Clemons '62
Kevin C. Colish '81
Catherine J. Comerford '89
Charles C. Cook '63
Marion Toohey Conway '70, '73
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Frank J. Costabile '56
Noel E. Cram '59
Josiah W. Crane '61
Adam P. Crimmins '01
James G. Cunningham, Jr. '52
Sharon L. Dalrymple '89
Michael A. D'Antuono '60
Leon A. Davieau '64
George H. De Voe '64
Raymond J. Del Grosso '99
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Vincent F. Difini '60
Donald B. Dinella '60, '63
Richard P. Donnelly '69
Robert S. Dow '69, '14 HON
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Harry C. Edgren '50, '57
James H. Edwards '63
Robert C. Eisele '49, '53
Robert Elegante '70
Michael P. Farina '70
William W. Fehr '70
James A. Feury '75
John F. Fisher, Sr. '71
Nancy D. Fitzroy '87
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John S. Fritts '72
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Ronald S. Gajdos '60
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Andrea Garcia '87
John A. Geary '69, '76
William J. Geiger '62
Kenneth F. Geiger '53
Louis F. Giannuzzi '61
James M. Giblin '75
Thomas J. Gill, Jr. '61
Arnold L. Giovannoli '53
Jerald L. Golmanavich '69
Ernest Gomez, Jr. '71
Paul E. Gorton '64
Anthony J. Graham '55
Robert L. Grand '68
Kenneth R. Grant '68
Albert P. Grasso '57
Robert D. Grausam '75
James J. Guerrieri '70
Rodwin E. Gulick '50, '55
Kenneth E. Hammond '56
James H. Hand '66
David Harnett '62
Albert Harraka '65
Dennis F. Hayes '64, '67
James M. Herschel '63
Jeffrey S. Horowitz '66
Joseph W. Ianniello '68
Garvey C. Ince '78
Eugene Ingrassia '63
Stefan Jachna '78
Durrell A. Johnson '51
Edward J. Kaiser '56
Allen Katz '64, '71
John E. Keane '54
August P. Keller '62
Alex Khowaylo '63
Robert J. Kleissler '63, '71
Albert P. Konopka '65
Robert M. Kowtko '66
Edward N. Kratzke '89
Donald J. Kroeck '56
Robert A. Kuchner '69
Capt. Robert W. Lambert '67
Otto J. Leopold, Jr. '64
Stephen Levy '70
Richard G. Ligus '69
Alfred J. Lipira '58
Barry H. Lustig '75
Richard E. Lyon, Jr. '93 HON
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Charles M. MacDonald '59
Eddie L. Malave '11
James Malik '73
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Thomas J. Maulshagen '60, '65
Charles F. McHugh '77
Ralph T. Meloro '58
James A. Mertz '71
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Michael M. Mokris '56
William A. Monsees '50
William J. Morrissey '93
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Vincent A. Muto '51
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Zoltan S. Nagy '58
Norman Nardelli '62
William H. Nash '53
George K. Nutz, III '59
Sander E. Nydick '59
James M. O'Brien '66
Richard P. O'Connell '69
Kelly A. O'Connor '94, '96, '03
Claude F. Oesterle '91, '98
John H. Olson '61, '66
Gerard P. Pallante '52
Allan J. Palmere '87
Edward J. Panella '70
Daniel V. Pankiewicz '77
Louis R. Papale '75
F. Donald Paris '62
Norman J. Pass '63
Donald P. Paulsen '51
Michael L. Pazden '70
Douglas S. Pearmain '80
Ronald W. Pincavage '69
Mark J. Piotrowski '68
Bernard J. Pisacich '58
Panagiotis G. Pittas '89
Ernest W. Posik '79
Joseph J. Praschak '73
Stanley Pukash '64
Leonard C. Pursiano '53
Cesar A. Quispe '13
Frederick A. Redline '75
John R. Redmon, Sr. '66
Robert F. Reich '51
Joseph M. Revesz '65
Mark M. Ritacco '83
Thomas J. Robe '57, '64
Thomas C. Rooney, Jr. '60
Alan S. Rosenthal '65
Thomas K. Rospos '73
Stephen J. Rotter '53
Timothy A. Roy '92
Harold Ruchlin '58
Michael J. Samuel '84
Frederick H. Sasse '66
Robert H. Sawyer '51, '60
Frank T. Scalera '50
Salvatore Scardigno '69
Harry F. Schellack '55, '61
Georgieanna L. Scheuerman '76
Gerald F. Schobert '74, '78
Frank Scymanski '68
Arthur B. Shaffer '85
John A. Shafranski '75
Rajni C. Shah '78
Nathaniel K. Shaw '57
Gary M. Sheeran '84
Donald S. Sikora '55
Brian S. Silva '20
Madan M. Singh '90
Martin T. Skeele '78
Jovitas G. Skucas '58
John A. Shafranski '75
Joseph S. Smyrski '66
Darrell L. Snider, Jr. '77
Barry Stevens '67
H. Henry Stroke '49
Joseph A. Sturno '62
Michael S. Taddeo '61
Keith B. Taylor '98
David R. Thompson '85
Richard E. Tkac '65
Ingar T. Tobye '57
Edward F. Toohey '63, '67
Inocencio Tundidor '87
William R. Udicious '62
Gary W. Verhoorn '71, '73
Michael Vitulano '63
Joseph Waldinger '60, '65, '71
Thomas W. Weber '58
Norman J. Weins '61
Paul B. Weise '67
Michael A. Whitehead '76, '85
Van D. Williams '09
Charles H. Witte '72
Wilbert H. Zuest '41

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125
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50+
NJIT alumni recognized as top executives in Fortune 500 companies

More than **71%**
of student-athletes are on the Dean's List

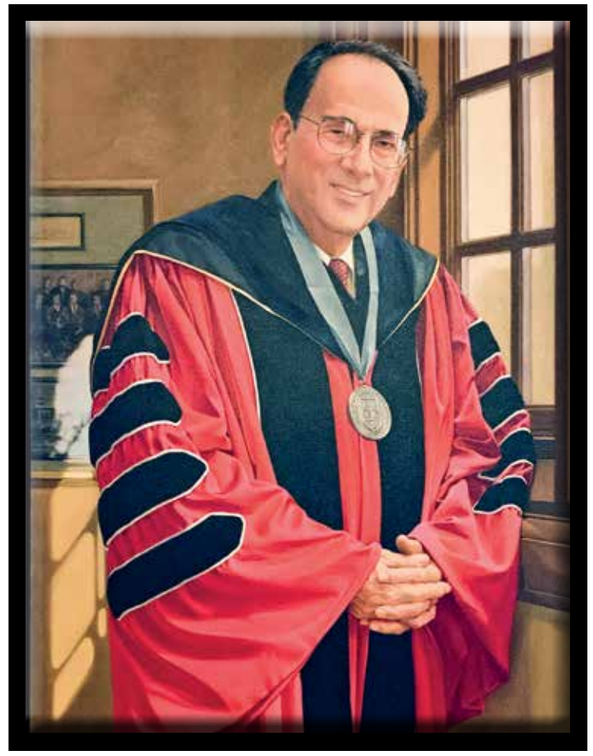
13 prestigious fellowship awards Academic Year '24-'25

90%
of undergraduate students are employed or enrolled in graduate school within 6 months of graduation

400+
corporate partnerships providing internships, co-ops and networking opportunities

A TRIBUTE TO

SAUL FENSTER



NJIT mourns the passing of Saul K. Fenster, the university's sixth president, who died peacefully at his home in Long Branch, New Jersey, on March 15, 2025. He was 91 years old.

Dr. Fenster served as president of NJIT from 1978 to 2002, a tenure marked by significant growth and transformation. Under his leadership, NJIT expanded its campus and broadened its academic offerings, which included the founding of the Martin Tuchman School of Management, the Jordan Hu College of Science and Liberal Arts, the Ying Wu College of Computing and the Albert Dorman Honors College. He is widely recognized as a key figure in the development of the University Heights section of Newark.

Dr. Fenster's legacy extends beyond physical expansion. His vision and commitment to academic excellence helped shape NJIT into the institution it is today.

"It is with sadness that I share the news of President Fenster's passing," said NJIT President Teik C. Lim. "His 24 years of dedicated service left an indelible mark on NJIT, and his contributions to our university and the city of Newark will be remembered for generations to come."

Born in New York City, Dr. Fenster earned a Bachelor of Science degree from City College of New York, a master's degree from Columbia University, and a Ph.D. in mechanical engineering from the University of Michigan. He began his career as a research engineer at Sperry Gyroscope Company/Rand Corporation before transitioning to academia. He served as a faculty member and administrator, including six years as provost, at Fairleigh Dickinson University's Rutherford campus, before joining NJIT.

He is survived by his wife of 66 years, Roberta, and his family. ■

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