ABSTRACTS

PHOTO: SCOTT JONES

The Honors College passes the torch to its incoming class as part of its 20th anniversary.

"…that's the beauty of the Honors College: In the end, it gives all students a chance to live up to their full potential."

— *Joel S. Bloom, president of NJIT*

BOUND BY HONOR

In the 20 years of its existence, NJIT's Albert Dorman Honors College has grown into one of the top colleges in the nation, with bright students, successful alumni, an expanding staff, a new building and an incoming freshman class whose students are poised to become leaders in their fields.

The college had much to celebrate last summer, when alumni, students and staff gathered on campus to welcome new students, reconnect and kickoff what will be a year full of 20th-anniversary events. The incoming honors freshman class also attended the ceremony, where older students passed them a symbolic torch of knowledge, commitment and leadership. They were later treated to a barbecue on the green behind the Honors Residence Hall.

Four successful alumni, including Paulo Pinho '96 and Jennifer Guevara '04, gave short speeches about their careers, highlighting how the college prepared them for success. "In the end," said Pinho, who now works as a pediatrician, does pro bono work to improve health care for the poor and credits the college for instilling him with a sense of social justice, "helping others enriches their lives and makes you rich."

Guevara talked about growing up in a single-parent home, where money was scarce and how her scholarships enabled her to focus on her studies, participate in sports, become a leader on campus and help her land a program-manager job at Lockheed Martin, one of the largest defense contractors in the world. "When you contribute to a scholarship for a student," said Guevara, "you are enabling a student's dream and paying for what may possibly be the next scientific breakthrough."

Twenty years ago, Joel S. Bloom was the founding dean and the biggest champion of the Honors College. And today, as president of NJIT, he's still championing the college.

"Discrimination is unfair and we must fight it wherever it exists," said Bloom during his speech, which touched on issues of inequality. "The Honors College offers very generous scholarships…and that's the beauty of the Honors College: In the end, it gives all students a chance to live up to their full potential." ∎

SEAL OF APPROVAL

The National Security Agency (NSA) and Department of Homeland Security (DHS) have designated NJIT as a National Center of Academic Excellence (CAE) in Cyber Defense Education through the 2020 academic year. NSA and DHS jointly sponsor CAE with the goal to reduce vulnerability in the national information infrastructure by promoting higher education and research, and producing a growing pipeline of professionals with information assurance expertise in various disciplines.

"This designation helps reaffirm NJIT's commitment to interdisciplinary education and research," says NJIT Provost Fadi Deek '85, '86, '97. "It will assure the protection of our national information infrastructure by training more scientists and technologists, who can contribute to reducing vulnerabilities in our vast networks and securing our systems."

The commendation comes at a critical time, as information security threats continue to dominate headlines, classified email systems are routinely compromised and a recent hack at the Office of Personnel Management exposed the sensitive data of over 22 million people. Still, thousands of cybersecurity jobs go unfilled each year, making it the most in-demand profession in the tech sector with a potential starting salary upwards of $100,000 per year.
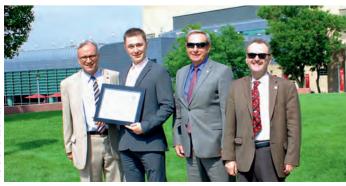
"There is a dire need in this area and a critical shortage of professionals with cybersecurity skills in the United States," says Reza Curtmola, an associate professor of computer science at NJIT who spearheaded the certification effort and conducts research in applied cryptography and security of cloud computing and wireless networks.

Curtmola, with the help of Cristian Borcea, associate professor and chair of the computer science department, used the College of Computing Sciences' Master of Science in Cyber Security and Privacy program – and more than 50 courses across multiple departments – to satisfy the certification requirements. Further cementing NJIT's status as a pioneer in the education and advancement of proactive cyber defense, Curtmola and several of his colleagues established the New Jersey Center for Cybersecurity, an NJIT-based facility focused on cybersecurity research and transformative solutions.

"With our recent CAE designation, the talented faculty we've recently hired, the large grants we've got coming in and the federally supported research efforts underway," said Curtmola, "NJIT is building a critical mass and increasing our visibility as a top university for future leaders in the field of cybersecurity." ∎

FROM LEFT: NJIT Provost Fadi P. Deek, Computer Science Professor Reza Curtmola, College of Computing Sciences Dean Marek Rusinkiewicz and Professor James Geller display a certificate issued by the National Security Agency and U.S. Department of Homeland Security, designating NJIT a National Center of Academic Excellence in Cyber Defense Education.

A courtyard at Bard High School Early College in Newark revamped by the Freedom By Design team.

FUELED BY DESIGN

Last spring, Albina Gode '15, Monali Patel '15 and Naomi Patel '15 (no relation), walked across the stage at Newark's Prudential Center during NJIT's 99th commencement ceremony to accept their B.Arch degrees after having clocked countless hours of volunteer work fashioning modest design and construction solutions.

As co-directors of the NJIT chapter of Freedom By Design – an American Institute of Architecture Students community service committee, which architecture and design students join to utilize their talents learned in school to impact the lives of people in their community – the three Honors College alumnae worked tirelessly on a number of projects this year, including a revamp of an unused quad at the Bard High School Early College in Newark.

"We rethought and redesigned their courtyard so that they can use it as a classroom, lounge and an educational gathering space," explained Gode, who, in 2011, founded the NJIT chapter of Freedom By Design. "The students helped with the planning, painting and designing." The result is a converted outdoor garden enclosure equipped with rustic wooden bench seating, vibrant artwork and flowers.

In addition to the courtyard initiative, the Freedom members also worked on a design competition, which produced sketches of a façade for a factory building used for occupational training and diagrammed a five-chapter DIY emergency handbook to help homeowners in New Jersey better prepare and react to man-made and natural disasters.

Gode cites the many NJIT professors she's interacted with as the motivators and influencers behind the challenging work she's done.

"The greatest and strongest asset of NJIT, I think, is its people," shared Gode. "Throughout my time at NJIT, I have had the pleasure to study and work amongst commendable faculty and students… and many others I will always refer to with pride." ∎

> ## "The field of computer science provides great jobs yet far too few young women pick up on the opportunity due to misperceptions."
> — *NJIT Professor James Geller*

NJIT aims to increase diversity in computer science.

BRIDGING THE GAP

NJIT is one of 15 universities to participate in the Building Recruiting and Inclusion for Diversity (BRAID) initiative, a three-year effort formed by Harvey Mudd College and the Anita Borg Institute to expand outreach to high school teachers and students to modify introductory computer science courses and broaden participation among women and students of color.

"The field of computer science provides great jobs yet far too few young women pick up on the opportunity due to misperceptions," said NJIT Professor James Geller, who attended the annual BRAID conference at Harvey Mudd College in Claremont, Calif., where he offered insight on ways to simplify explanations of how computers work to high school students.

Already in its second year of funding, NJIT will receive $30,000 per year to implement programs that offer creative, interdisciplinary approaches to the modern discipline of computer science and provide data for a research study documenting the progress.

"NJIT's Computer Science Department is thrilled to take part in the BRAID initiative to help break down barriers and ensure that women and underrepresented groups not only understand the importance of computer science," said Geller, "but also have a fair shot at one of the most lucrative professions in the country." ∎

EXPANDING THE TALENT PIPELINE

NJIT students interning at Prudential this summer participated in a special networking session with employees of the company who are also NJIT alumni. The event was hosted by Steve Saperstein '84, Prudential Fixed Income's chief operating officer and the firm's executive sponsor for NJIT, at which he emphasized the Newark-based company's commitment to looking for future talent at the university.

"Talent is extremely important to Prudential and it was great to meet so many talented students from NJIT," said Saperstein. "Prudential looks forward to working with NJIT to expand its talent pipeline."

The 17 interns had the opportunity to meet with alumni who are now working in investments, technology, the actuarial division, and other areas within Prudential's many business and corporate centers. The students received additional information about the company and the variety of career paths it offers. ∎

PULLING RANK

From federal recognitions to annual "best of" lists, NJIT continues to gain ground and move up the ranks as a smart choice when looking to invest in a good-value education.

NJIT was recently ranked first among New Jersey public universities and third among all New Jersey schools where graduates earn the highest starting salaries – $53,900 – in a study by New York-based financial technology company SmartAsset.

Time's *Money* magazine cited NJIT as one of the top 25 colleges where you can earn six figures before getting an advanced degree, after PayScale found that the mid-career median salary of an NJIT graduate with a bachelor's degree is $101,000. According to PayScale's 2015-2016 College Salary Report, NJIT also tied at 226 for best graduate schools (master's) for salary potential, with a midcareer median salary of $115,000.

U.S. News & World Report ranks NJIT 140 in the category of Best National Universities. NJIT, which moved up nine places from last year's 149, is also ranked well for its ethnic diversity and providing students with needed opportunities, ranking among the top 20 universities nationally in this category.

"NJIT is growing and is in a positive state of transformation, so we're pleased to receive external recognition of our efforts," said NJIT Provost Fadi P. Deek. "This is the second year in a row that NJIT has increased in ranking by *U.S. News,* which we know is widely read by parents and prospective students."

The ranking, which reviewed nearly 1,800 colleges and universities nationally, considers criteria including assessment of excellence, graduation and retention rates, faculty resources, student selectivity and financial resources. ∎

"Our one simple goal has been to revolutionize communication and make the experience unique and fun for the user." — Ricky Isibor '06

Ricky Isibor '06 and Haig Jean '07, creators of the Expresser app.

PICTURE PERFECT

Ricky Isibor '06 and Haig Jean '07 have teamed up to create a free app that is – literally – changing the face of text messaging on mobile devices.

The Expresser Keyboard app allows texters to enhance their messaging capabilities by inserting photos – dubbed "Expressers" – illustrated by pop culture icons ranging from comedian Jimmy Fallon to pro boxer Manny Pacquiao. Users can not only learn more about the origins of their Expresser by clicking on the icon, but they can also obtain custom-made expressers by uploading their own pre-existing expresser emojis to the My Expressers page inside the app. They can also submit their photo via an In-App Purchase, from which a personalized "expresser" will be generated. Response to the app has been "overwhelmingly phenomenal," according to Isibor.

"Our one simple goal has been to revolutionize communication and make the experience unique and fun for the user," says Isibor.

Not only have they trended 15 times at No. 1 on Trending Searches in the Apple App Store, but they have also peaked at No. 5 on the chart for Top 200

(Free) in Utilities for iPhone. And since February 2015, they achieved nearly one million downloads worldwide in the App Store alone, which they attribute to their own grassroots marketing efforts and word of mouth. After forming HAIRIC LLC in 2012, the pair has since been working tirelessly around the clock to build the Expresser brand.

Isibor and Jean first met in the summer of 2001 as students in NJIT's Educational Opportunity Program (EOP) and developed an even deeper bond when they were both selected to be part of the Black Engineering Technology Alumni Association (BETAA) program. Coincidentally, they discovered that they were also long-time neighbors: both grew up in Irvington, N.J., lived around the corner from each other and attended the same elementary school. The similarities didn't end there, as they also were both raised by immigrant parents and completed engineering degrees at NJIT: Isibor in electrical engineering and Jean in industrial engineering.

They both credit the EOP program and Executive Director Tony Howell with encouraging their interest in technology.

"Mr. Howell allowed me to further my education as well

as meet others from similar backgrounds," recalls Jean. "I find myself visiting the EOP office often to catch up with the EOP advisors and mentor other students. NJIT is not only an institute, but a family."

"I come from a large household and we shared one computer," says Isibor. "My brothers and I would constantly bicker over computer time. So, when I received my very own

first desktop computer as an incoming EOP summer freshman, it meant the world to me. I wouldn't be the tech-savvy individual I am today. The individuals in the EOP office have assisted me through my years of college and even nine years removed from college. To date, the amount of resources and relationships I've been able to utilize from being a part of this program is endless." ■

A MONUMENTAL HONOR

"Monument Man" Harry Ettlinger, who received a B.S. in mechanical engineering from Newark College of Engineering in 1950, was awarded a Congressional Gold Medal in October. He was the only one of the four survivors to speak at the ceremony, which honored the men and women who protected historical sites and recovered cultural artifacts during World War II.

A refugee from Nazi Germany, Ettlinger joined the U.S. Army in August 1944, and became part of the monuments men in 1945 because of his German language skills. At the end of World War II, Sergeant Ettlinger along with the other members of the Army's Monuments, Fine Arts and

Archives (MFA&A) section, were assigned to recover and repatriate innumerable works of art looted by the Nazis, as depicted in the motion picture *Monuments Men*.

In recent years, the MFA&A section and Ettlinger's role have received wide attention through the efforts of philanthropist Robert Edsel, author of *The Monuments Men: Allied Heroes, Nazi Thieves and the Greatest Treasure Hunt in History* and *Rescuing Da Vinci*. Edsel also established the Monuments Foundation for the Preservation of Art, dedicated to the legacy of the men and women who served in the MFA&A section. In 2007, this legacy was honored in a special way when President George W. Bush presented the foundation with the National Humanities Medal at a ceremony attended by Ettlinger and three other surviving "Monuments Men." ■

"Monuments Men" Harry Ettlinger '50 (center) and Richard Barancik (right) received the Congressional Gold Medal from House Speaker John Boehner (R-Ohio) during a ceremony in the U.S. Capitol's Emancipation Hall.

Yi Chen, an associate professor and The Henry J. Leir Chair in Healthcare in NJIT's School of Management, received the Big Data Young Researcher Award at a plenary session of six co-located IEEE conferences in New York City. Her research focuses on applications of big data and social media to improve health care delivery.

Rajesh Davé, distinguished professor of chemical, biological and pharmaceutical engineering, has won the 2015 Lectureship Award in Fluidization from the American Institute of Chemical Engineers (AIChE). Davé also will be honored by the New Jersey Hall of Fame with its "Innovators" award.

Karen A. Franck, professor in the College of Architecture and Design (CoAD) and director of CoAD's Joint Ph.D. Program in Urban Systems, has authored *Memorials as Spaces of Engagement: Design, Use and Meaning* (Routledge), which examines memorial design and the relationships between commemorative sites and their visitors.

Richard Garber, director of the New Jersey School of Architecture (NJSOA) served as a judge for Build NY Live, the sixth in a series – and the first in the U.S. – of international design competitions sponsored by BuildEarthLive.com, a 48-hour virtual design, cloud-based collaboration competition organized by cloud technology company, Asite.

James Geller, professor and chair of the Department of Computer Science, coauthored and presented the paper "Auditing of Systematized Nomenclature of Medicine-Clinical Terms (SNOMED CT)"

using the National Drug File-Reference Terminology (NDF-RT) at the 2015 Medical Informatics Europe Conference (MIE2015) in Madrid.

Eric Katz, professor and chair of the Department of Humanities, has published *Anne Frank's Tree: Nature's Confrontation with Technology, Domination and the Holocaust* (White Horse Press), which uses several case studies or historical examples that demonstrate the pervasive power of the idea of domination expressed through the development and use of science and technology.

Michael Lee, assistant professor in the Department of Information Systems, received the Young Generation Leadership Award from the Korean-American Scientists and Engineering Association. The award was presented at the U.S.-Korea Conference in Atlanta, Georgia.

Bernadette Longo, associate dean in the College of Science and Liberal Arts and an associate professor in the Department of Humanities, has published *Edmund Berkeley and the Social Responsibility of Computer Professionals* (ACM Books), the first full-length biography of computer pioneer/social activist Edmund Berkeley, who is credited as being the founder of the Association for Computing Machinery (ACM) in 1947. Longo also presented a paper related to her book at the Society for the History of Technology annual meeting in Albuquerque in October.

Vincent Oria, associate professor in the Department of Computer Science, has won the prestigious Test of Time Award given by the

Association for Computing Machinery's Special Interest Group on Management of Data in recognition of his paper, "Robust and Fast Similarity Search for Moving Object Trajectories."

Bill Rapp, The Henry J. Leir Professor in NJIT's School of Management and Director of the Leir Center for Financial Bubble Research, presented the keynote address in June at the International Conference in Current Economic Trends in Emerging Countries in Timisoara, Romania. "What Is An Emerging Market and When Do We Know It Has Emerged?" was the title of his talk.

Donald H. Sebastian, president and chief executive officer of the New Jersey Innovation Institute, an NJIT corporation, has been named an Innovation Hero as part of the 2015 *NJBIZ* Healthcare Heroes Awards program, which honors individuals and organizations that are making a significant impact on the quality of health care in New Jersey.

Judith Sheft, associate vice president of technology development, was recognized as one of six top women "intrapreneurs" by Leading Women Entrepreneurs & Business Owners. This is the first year the organization has honored "intrapreneurs," which it defines as corporate innovators who are all accomplished, intelligent and inspire others through their work and make a vital impact in their companies, their industries and their communities.

Osvaldo Simeone, associate professor in the Department of Electrical Engineering, received a Best Tutorial Paper Award from the IEEE Communications Society for "Multi-Cell MIMO Cooperative Networks: A New Look at Interference," *IEEE Journal on Selected Areas in Communications*, Vol. 28, No. 9, December 2010.

D. Yvette Wohn, assistant professor in the Department of Information Systems, has been named a recipient of the 2015 Yahoo Faculty Research and Engagement Program (FREP) Award. One of the many industry-academia programs powered by major technology companies, FREP is an academic outreach initiative designed to produce the highest-quality scientific collaborations and outcomes by engaging with faculty and students conducting research in areas of mutual interest.

Zhipeng Yan, associate professor of finance, was named a 2014 Top Ten Outstanding Researcher at the 2015 Internet Economy Researcher Conference in Beijing, China. Yan was recognized for his research study "Caring for the Elderly: Top 100 Chinese City Index" conducted with graduate students Kuang Du '14 and Zhongcheng Lin '15 and the Alibaba Research Institute.

Mengchou Zhou, distinguished professor of electrical engineering, was presented with the 2015 Norbert Wiener Award for fundamental contributions to the area of Petri net theory and applications to discrete event systems at the 2015 IEEE International Conference on Systems, Man, and Cybernetics in Hong Kong.