



Northeastern University

Deepening our impact,  
shaping the future

## **2021** INSTITUTIONAL ACCOMPLISHMENTS

*All statistics reflect 2020–2021 data unless otherwise noted.*



## Advancing our transformative vision

During the past year, while much of the world was on hold, Northeastern actually gained momentum and deepened its impact.

Along the way, we also learned a powerful lesson about the nature of global problems such as pandemics, climate change, and systemic racism. They are not siloed, static challenges; they intersect, evolve, and manifest in a multiplicity of ways, depending on the near-limitless contexts that shape our world.

To understand and solve these problems, therefore, higher education must provide insight into those continuously changing contexts—insight that can only come from inclusive experience.

Our achievements this year—notably, the signature accomplishment of our merger with Mills College in California—have been building toward this future. We have created more diverse and inclusive pathways for our learners, innovators, and communities to intersect with real-world challenges in all of their contexts, untethered from outmoded majors and traditional disciplines.

That we have advanced this transformative vision during an unprecedented global crisis speaks to your commitment, resilience, and inventive spirit. I extend my deepest thanks to all within the growing Northeastern community.

Joseph E. Aoun  
President





# Broadening our impact

## **In a first-of-its-kind partnership,**

the university merged with Mills College in Oakland, California, giving the two schools “an opportunity to create something truly unique in higher education,” said Northeastern President Joseph E. Aoun—a comprehensive, bicoastal university built on the power of global experience.

Mills is a women’s college with a mission focused on equity, social justice, and women’s leadership that will complement and advance Northeastern’s own mission in diverse and inclusive global experiential learning and research.

Mills College at Northeastern University will include students of all genders. Its 960 undergraduate and graduate students will have access to the university’s breadth of experiential, lifelong learning, and student life opportunities. The college’s 25,000 alumnae will join Northeastern’s global network of graduates.

The merger, which will fully take effect on July 1 of next year, will also establish the Mills Institute, dedicated to the advancement of women’s leadership and empowering Black, Indigenous, and people of color, and first-generation students.

“By joining together,” said President Aoun, “Mills and Northeastern can reach new heights and have broader impacts on our world. This is our collective mission, our calling, our guiding star.”



# Learning

IMMERSED IN EXPERIENCE

239 Combined  
Majors,

up from 40 ten years ago

148  
Countries

where Northeastern has provided  
experiential learning opportunities,  
up from 60 in 2006

## Music elevates pre-med studies

Euan Zhang, AMD'23, chose Northeastern for its emphasis on combining disciplines. He's taking advantage of that opportunity by pursuing an unconventional path to medical school: music technology. Working on behavior and brain imaging studies with Psyche Loui, associate professor of music technology, Zhang has learned to use simple melodies in the Bohlen-Pierce scale—largely unknown to Western cultures—to test people's facility with pattern recognition.





## Learning

EXPERIENCING  
THE WORLD

2,935 Co-op  
Employers  
across the U.S.  
and worldwide

10,978

Co-op Placements



74% Increase

in co-op placements  
since 2006-2007

## Strengthening communities is her business

By seasoning her business studies with choice global experiences, Abigale Purvis, DMSB'21, has learned how to create change from the ground up. She helped people enduring homelessness train for food industry jobs in Boston and did volunteer work for a women's sexual violence prevention group in Mexico. Farm work in Ecuador gave her new perspectives on food sustainability. And a position with Boston's Rose Kennedy Greenway has immersed her in urban park programming. Her next challenge is graduate school, to focus on creating more resilient food systems.



## Learning

THE LIFELONG  
POWER OF PLACE

18,336   
Students in Graduate Degree  
and Certificate Programs

up from 5,410 in 2006

12 Campus  
Locations  
in our global network

2,300+  
Experiential  
Network Partners

provide online learners with real-world  
projects in their fields of study



### Aiming for Big Data leadership

With a degree in business administration from the Universidad Nacional Mayor de San Marcos in Lima, Peru, Zoram Blancas Ruiz set his sights on a career in the U.S. Today he's mastering data analytics at Prudential Financial, where he's applying self-taught skills to help businesses improve their practices. To expand his skillset, he's earning a master's degree in analytics part time at Northeastern's Roux Institute. With help from industry-leading professors and peers, he plans to position himself as a thought leader in the field.

### Probing the values behind our technology

Shreya Rajesh credits a humanitarian engineering project with Engineers Without Borders in Cambodia for her appreciation of the role of ethics in developing new technologies. Inspired by remarks on the importance of a humanities education by a professor at Northeastern's New College of the Humanities in London, she enrolled first in NCH's undergraduate philosophy program and then in the Master's in Philosophy and Artificial Intelligence. She is probing both the role of applied ethics in technology and AI's role in aiding our moral deliberations.





## Learning

GROWING STRENGTH  
IN DIVERSITY

118%

Increase in Latinx  
Freshman Enrollment  
since fall 2020

148%

Increase in  
Black Freshman  
Enrollment  
since fall 2020



“*Following the BLM protests last year, I felt it was important for me to help represent the voices in our community. Working with fellow Black student leaders and the administration was an eye-opening experience. I feel hopeful based on the actions the university has taken, and I’m excited to see the impact it will have on the Northeastern community.*”

—**Michelle Faulkner, AMD’20, MS’21**

EXECUTIVE DIRECTOR OF SISTERS IN  
SOLIDARITY, MEMBER OF NORTHEASTERN  
BLACK STUDENT ASSOCIATION



# Achievement

HONORS AND DISTINCTION

36 Academic  
Excellence  
Awards

conferred on students and recent graduates  
by nonprofits and government agencies

38 NSF Graduate  
Fellowships

held by current PhD students,  
a 280% increase since 2016

93%

Of Graduates Employed Full  
Time Or In Graduate School

within 9 months of graduation (10-year average)

13

Faculty Earned Awards

for early career achievement, including 9 National  
Science Foundation CAREER Awards



## Achievement

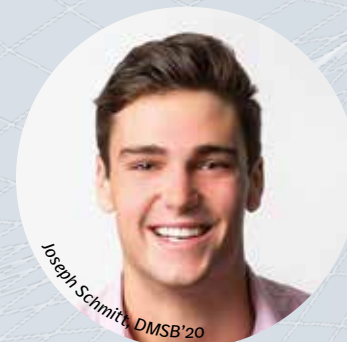
HIGH AMBITION  
REWARDED

7 Fulbright  
Fellowships  
won by undergraduates



### Engineering a more sustainable planet

Tyler Gogal will devote his Fulbright fellowship to pursuing his long-held passion for advancing environmental sustainability at the University of Iceland.



### Bringing people and nature into harmony

On his Fulbright fellowship, Joseph Schmitt will research the effect of infrastructure on ecotourism at Zambia's Sioma Ngwezi National Park. He will seek to bolster the tourism economy, discouraging poaching and other exploitative and environmentally damaging practices.



### Understanding climate change in its cultural contexts

A computer engineering and computer science major with global experience, Jacob Kaplan will use his Fulbright fellowship to teach English in Taiwan and further his goal of solving climate change issues that demand cultural agility.

### Promoting childhood mental health

With deep interest in serving children as a psychologist, Lydia Cleaveland will use her Fulbright to teach English in Spain and work on an independent project focused on integrating psychological prevention science into classrooms.



### Fine-tuning therapies to target cancer

On his Fulbright to the University of Santiago de Compostela in Spain, Sagi Ravid will pursue research on nanocarriers that utilize drug delivery and immunotherapy to better target cancer cells and prevent them from metastasizing.



### Fighting cancer at the genetic level

Shellaina Gordon will use her Fulbright to study epigenetic oncology—the impact of changes in gene expression on different cancers—at the Peter MacCallum Cancer Centre in Australia, with a research focus on emerging, personalized therapies for blood cancers.



### Improving health services for the marginalized

With his Fulbright, Connor Holmes will conduct research in India to explore the structural forces that shape the health of transgendered female sex workers.





# Achievement

## FACULTY EXCELLENCE



### **The World's Top 50 Thinkers 2020, *Prospect***

#### **Ari Ezra Waldman**

Professor of Law and Computer Sciences; director, Center of Law, Information, and Creativity, Northeastern School of Law and the Khoury College of Computer Sciences

*Prospect's* editors noted that Waldman “stands out as a mind who can grapple with every side—technological, legal, and sociological—of the multifaceted problem of privacy in a digital age.”



### **Fellow, National Academy of Inventors**

#### **David Luzzi**

Senior Vice Provost for Research; Vice President, Innovation Campus; Professor of Mechanical and Industrial Engineering

Luzzi was recognized for his leadership of Northeastern's research enterprise and for his role in developing the university's Innovation Campus at Burlington as a center for commercializing research discoveries.



### **Kluge Chair in the Countries and Cultures of the South, The John W. Kluge Center at the Library of Congress**

#### **Valentine Moghadam**

Professor of Sociology and International Affairs

The Kluge Center recognized Moghadam for her scholarly accomplishments in exploring globalization, social movements, and feminist networks in the Middle East and North Africa, and for her capacity to communicate her ideas clearly.

### **100 Brilliant Women in AI Ethics for 2021, Women in AI Ethics**

#### **Tina Eliassi-Rad**

Professor of Computer Sciences; core faculty member, Network Science Institute and Institute for Experiential AI

Eliassi-Rad's selection was based on her strong advocacy for responsible AI and greater diversity in computer science and related fields.



### **Jefferson Science Fellow, The National Academies of Sciences, Engineering, and Medicine**

#### **Vincent Harris**

University Distinguished Professor and William Lincoln Smith Professor of Electrical and Computer Engineering

Harris was selected for his ability to provide the technological expertise that U.S. policymakers need on issues such as end-of-life plastics, coal-fired power, and supply chain dynamics of critical materials.



### **Fellow, American Institute for Medical and Biological Engineering**

#### **Heather Clark**

Professor of Bioengineering and Chemistry and Chemical Biology; director, Institute for Chemical Imaging of Living Systems

Clark was selected for her development of nanoscale optical probes for chemical imaging, joining the two percent of researchers in medical and bioengineering who are elected AIMBE Fellows.





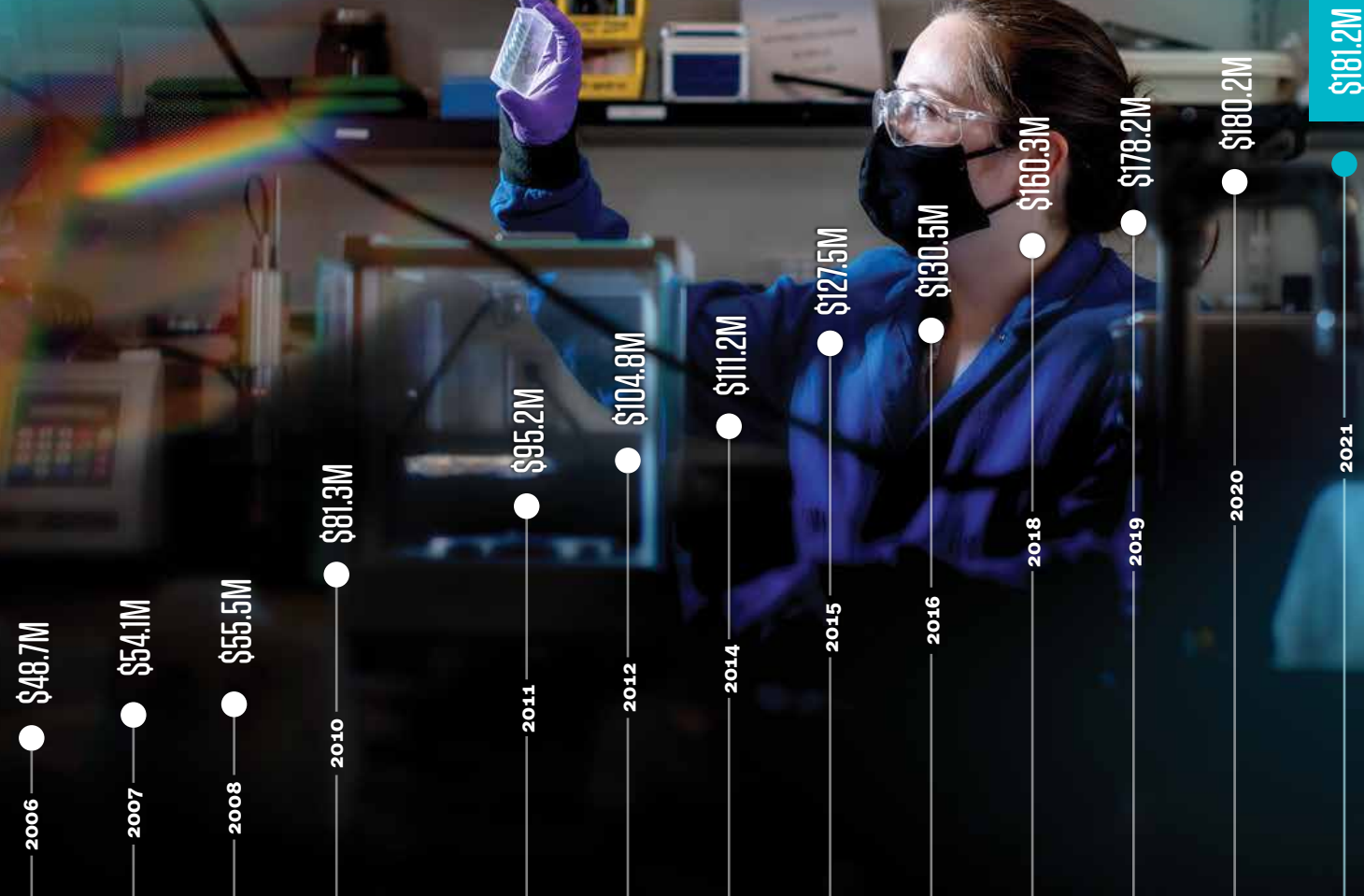
# Research

DISCOVERY BEYOND BOUNDARIES

# \$181.2M

External  
Research  
Funding

an **increase of 272%**  
since 2006



## Using biomedicine to promote public health

Growing up in the Democratic Republic of the Congo, Jordie Kamuene saw the urgent need for stronger public health programs. The experience drove her career ambition to improve public health and social justice. As a doctoral student in Assistant Professor Leigh Plant's pharmaceutical sciences lab, Kamuene examines how proteins in the heart affect important cardiac functions. "We work with Northeastern's Center for Drug Discovery and faculty across campus," she says, "and these collaborations help us think about problems in new ways."





## Research

MULTI-EXPERTISE TEAMS  
DRIVE IMPACT



### Putting our perception of color into words

How we perceive color depends on its surrounding context and whether we interpret that background as light or shadow. At Northeastern in Boston and London, researchers in color psychophysics and computer science are pooling their expertise to learn why. “We want to understand how signals in the retina’s cone photoreceptors relate to one’s interpretation of light as color,” explains Professor Rhea Eskew (above, left), who is working with Dimitris Mylonas (center) and Alexandros Koliouisis (right) at NCH and Andrew Stockman at University College London. Their work has implications for understanding cognition and communicating about color—important when designing and interpreting computer graphics.

### Establishing Northeastern’s leadership in wireless innovation

The Federal Communications Commission designated Northeastern University as the nation’s fourth Spectrum Innovation Zone, greatly expanding the capacity of university researchers and partners to research and develop groundbreaking 6G and other wireless communications and sensing technologies. The move strengthens the university as a leader and innovator in wireless research, said Tommaso Melodia, the William Lincoln Smith Professor of Electrical and Computer Engineering and director of Northeastern’s Institute for the Wireless Internet of Things. “This is a big deal,” FCC acting chair Jessica Rosenworcel said. “When you give innovators in the United States sandboxes to test new ideas, good things follow.”



### Inroads against a neglected tropical disease

A Northeastern grant program promoting interdisciplinary collaboration sparked the development of a treatment and research center in Baringo, Kenya, for visceral leishmaniasis, a parasitic infection that annually afflicts as many as 90,000 of the world’s poor. In 2011, Richard Wamai, associate professor of cultures, societies, and global studies (below, left), and Michael Pollastri, professor of chemistry and chemical biology (now also senior vice provost for the Roux Institute, below, right), resolved to jointly study infectious diseases in Wamai’s native Kenya. Their work helped launch Northeastern’s Integrated Initiative for Global Health, Baringo’s center, and soon, Wamai hopes, an ointment devised by the U.S. military to treat cutaneous leishmaniasis.



### Examining gender inequities in drug efficacy

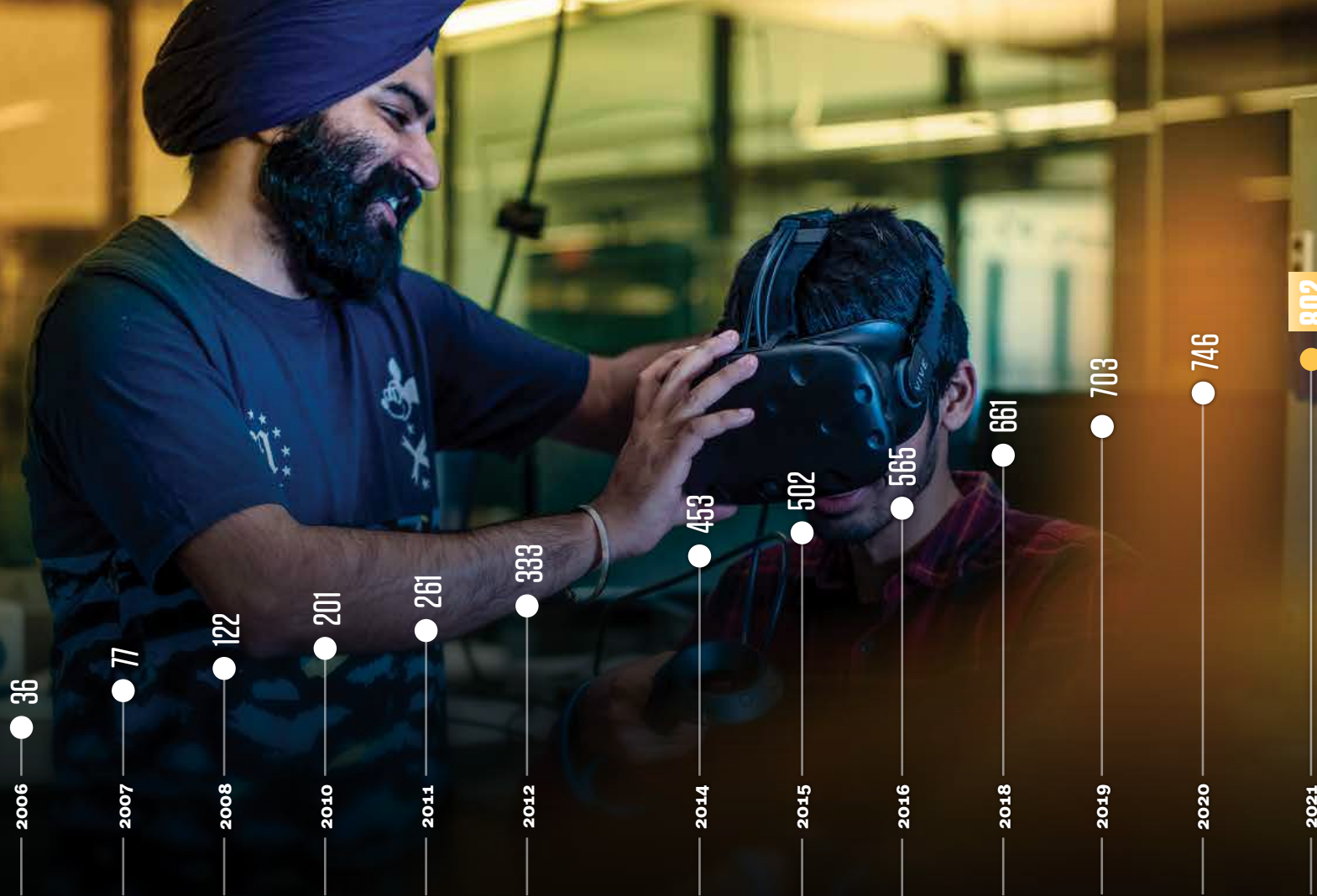
Why do women have adverse drug reactions nearly twice as often as men? Because pharmaceuticals are tested in male laboratory animals, says Northeastern psychology professor Rebecca Shansky (above, left), who studies sex differences in the brain. Shansky has helped debunk the myth that hormone variants in females complicate research more than in males. She advocates using both sexes, as the National Institutes of Health has required of grant applicants since 2016. In *Nature Neuroscience*, she and Georgia State University neuroscience professor Anne Z. Murphy (right) argue that, absent enforcement, male-only studies will lead to less rigorous science and harmful outcomes for women.



# Faculty

EXPANDING OUR  
CAPACITY TO INNOVATE

125 Faculty with  
Interdisciplinary  
Appointments,  
up 198% in the last decade



802  
Tenured and  
Tenure-Track Hires

since 2006, including 56 in 2020–2021



# Entrepreneurs

## FUELING INVENTION

### AI helping to track ocean fish stocks

To maintain the health of America's marine fisheries, highly trained observers watch hours of video footage to gather a literal boatload of data on each catch. New England Marine Monitoring hopes to revolutionize this painstaking process with vital help from Northeastern's Roux Institute in Portland, Maine. NEMM plans to use machine vision-based artificial intelligence to shorten the video review time without sacrificing accuracy. The Roux Institute's leadership team helped by connecting NEMM with two Northeastern professors for technological know-how. The startup was also chosen for a Roux Institute Founder Residency, a yearlong venture advising program that aided NEMM's acquisition by an investment firm.



### Accelerating Maine's economy

The first cohort of 10 startup companies has been chosen for the Roux Institute Techstars Accelerator, an immersive entrepreneurship program to bring startup companies to Portland, Maine, help them build their businesses, and strengthen the regional economy. The initiative was launched in February through a partnership between Northeastern's Roux Institute and Techstars, a leading accelerator provider and global network that helps entrepreneurs succeed. The 13-week program—designed for high-growth technology companies from around the world—will provide funding, mentoring, and teaching in how to acquire and serve new customers, grow their talent pipeline, and attract additional resources and investors.

### Making smartphones more powerful

Smartphones use deep neural networks—a type of artificial intelligence—to sharpen videos, perform facial recognition, and detect hand gestures. These tasks must be processed on remote servers due to the computing power and memory required. But in a potential game-changer for phones and applications such as self-driving cars and IoT devices, a multi-university research team led by Assistant Professor of Electrical and Computer Engineering Yanzhi Wang has devised a method for enabling real-time AI on mobile devices themselves. They have formed a startup, CoCoPIE, based on their technology, which has already been licensed to eight companies.



### Bringing clean electricity to Nigeria

Natasha Ibori, SSH'18, co-founded Uwana Energy in 2020 to provide clean and affordable solar energy to Nigeria. The country produces little renewable energy, and many Nigerians lack access to the grid. Uwana Energy hopes to fill these gaps; it sells, installs, and maintains rooftop solar panels, and offers financing. Ibori's entrepreneurial journey included study in international affairs and social entrepreneurship and work experience at financial institutions in Boston and Lagos, Nigeria. She plugged into Northeastern's entrepreneurship ecosystem through the McCarthy(s) Venture Mentoring Network and the venture accelerator IDEA, and received a \$10,000 Award from the Women Who Empower entrepreneurship initiative for Uwana Energy.





# Pride & Support

A RECORD-SETTING YEAR

**\$194.4M** In Gifts and Pledges

## \$100M to educate a tech workforce

Northeastern's Roux Institute, an innovation hub launched to expand the digital economy in Maine and beyond, received \$100 million from the Harold Alfond Foundation. The gift provides financial aid for graduate students, funding for postdoctoral research, and support for students hired in months-long co-ops by Maine employers. The institute offers certificate, master's, doctoral, and postdoc programs in fields including artificial intelligence, digital engineering, and the advanced life sciences.

*“For first-generation immigrants like me, financial constraints are a barrier to higher education. With my Harold Alfond Foundation scholarship, I can focus on doing well in classes and embrace all the Roux Institute’s opportunities.”*

**—Sylvia Guzman**  
CANDIDATE FOR THE MS  
IN PROJECT MANAGEMENT,  
NORTHEASTERN’S  
ROUX INSTITUTE



## Pride & Support

THE BURNES FAMILY  
CENTER FOR SOCIAL CHANGE  
AND INNOVATION

“*To address complex and difficult legal and social problems, one has to be thoughtful, rigorous, imaginative, courageous, and tenacious. Don’t look at the challenges; look at the opportunities.*”

—Nonnie Burnes

L’78, H’07, LATE NORTHEASTERN TRUSTEE EMERITA

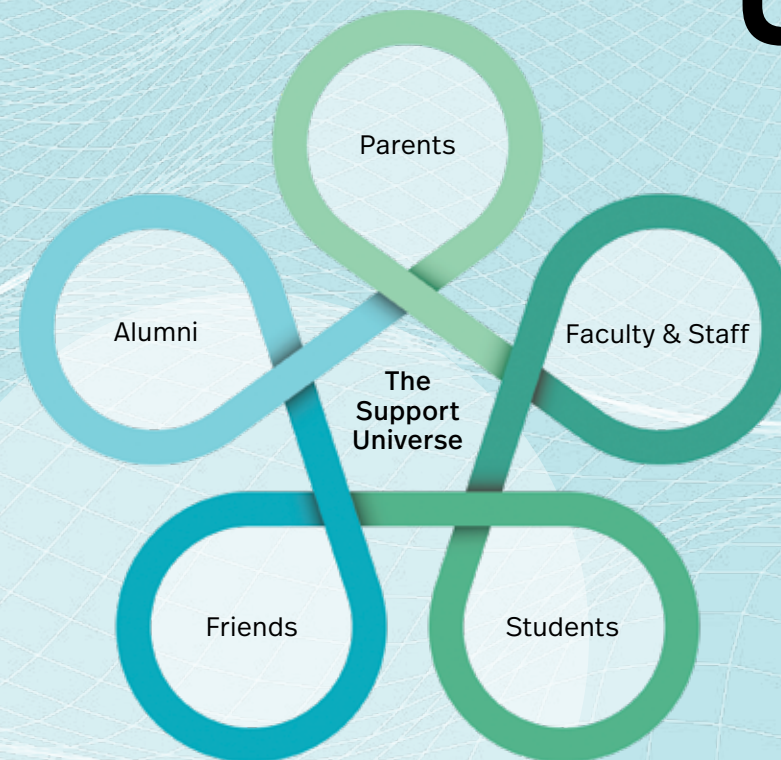


### \$20M for social impact

The Burnes Family Center for Social Change and Innovation was established with a \$20 million commitment from the late emerita trustee Nonnie Burnes, L’78, H’07, and her husband, Rick Burnes. Integrating education, research, experiential learning, and professional development, the center reflects Northeastern’s focus on advancing diversity, equity, and inclusion, and its multidisciplinary approach to solving global problems. The Burnes family’s gift builds on one they made in 1999 to create the Public Interest Law Scholars Program, which supports outstanding lawyers committed to social justice. Nonnie Burnes passed away in August 2021, shortly before the center’s launch.

## Pride & Support

HIGH-IMPACT GIVING



**563** Corporate and  
Foundation Gifts  
and Pledges  
totaling **\$153.2 million**

**17,857**  
Individual Donors  
from **56 countries**, including **6,167**  
first-time donors



## Pride & Support

### HIGH-IMPACT GIVING



### Advancing legal system reforms

To combat systemic racism and help reform the criminal justice system, the Zitrin Foundation donated \$2.5 million to create the Elizabeth Zitrin Justice Fellowship at the Northeastern University School of Law. Zitrin, L'79, is known for her pioneering efforts to abolish the death penalty. Zitrin Fellows will devote one year to litigation, policy advocacy, and public education. The inaugural fellow will join Northeastern's renowned Civil Rights and Restorative Justice Project.

### Bringing energy justice for all

To promote renewable energy sources and their more equitable distribution, Northeastern has launched the Initiative for Energy Justice. Founded by (below, left to right) Northeastern Professor of Law Shalanda Baker, Shiva Prakash, L'16, and fellow attorney Subin DeVar, this public health initiative will provide policymakers with a framework and best-practice tools, while also generating grassroots engagement. The founders' efforts have already attracted \$1.23 million from the Kendeda Fund and the Barr, Heising-Simons, and Surdna foundations.



### Partnering for COVID safety

During the past year, life sciences giant Thermo Fisher Scientific partnered with Northeastern to help keep students, faculty, and staff at our Massachusetts campuses safe. The partnership enabled the development and operation of a comprehensive testing center for the SARS-CoV-2 coronavirus and tracking of the virus's spread. In late April 2021, Northeastern's state-of-the-art Life Sciences Testing Center, located at its Innovation Campus in Burlington, conducted its millionth COVID-19 test.



### Boosting women's entrepreneurship

In spring 2021, Northeastern, the Cartier Women's Initiative, and other corporate and individual donors established the Women Who Empower Innovator Awards. More than 150 applications for awards poured in from people representing Northeastern's nine colleges and more than a dozen countries on five continents. A total of 19 venture creators, including (below, left to right) Molly Beck, Gabrielle Whittle, and Emily Man, received 17 awards equaling \$100,000 in one-time grants.



### Giving when it matters most

On Giving Day, more than 17,000 gifts from 28 countries totaling nearly \$1.3 million supported student groups and organizations on Northeastern's Boston campus. This fourth annual event, held virtually on April 8, exceeded expectations, especially given the COVID-19 pandemic. The 24-hour philanthropic blitz challenged alumni, students, parents, staff, faculty, and friends to direct donations and matching gifts to student clubs, team sports, schools and colleges, and other organizations.



## Pride & Support

NETWORKED FOR CHANGE

# 282,000+

Alumni Live and Work  
in 179 Countries

# 9,600+

Participants

from **145 countries** engaged in  
**397 programs and events**

# 48

Northeastern  
Communities on  
Four Continents

Asia, Europe, North America, and  
South America



### Transformative changes in COVID's wake

Nearly 200 alumni tuned in to Northeastern's Beyond the Pandemic: COVID-19 series to explore the coronavirus' impact on fields from biotechnology to the liberal arts. In a conversation about the evolution of design and architecture, Dan Adams, director of the School of Architecture, Sara Jensen Carr, assistant professor of architecture, and Kristian Kloeckl, associate professor of Art+Design, said there will be an industry focus on the creation of outdoor workspaces.

### Championing climate justice

Beyond its environmental implications, the climate crisis has highlighted profound social, racial, and economic inequities. Those injustices were the subject of a virtual talk last spring attended by nearly 130 alumni and featuring Northeastern Director of the School of Public Policy and Urban Affairs Jennie Stephens, Future Faculty Fellow Frances Roberts-Gregory, and Professor of Environmental Science and Public Policy Brian Helmuth. The panelists urged listeners to support public investment in climate-change mitigation projects to benefit their communities.



### Creating social impact through the workplace

To end systemic racism, ordinary people must find their voices, said Paul Francisco, chief diversity officer and head of workforce development at State Street Corporation. Speaking at a Northeastern Black Law Student Association virtual event in February, he offered examples from his own experience: co-organizing a Black Lives Matter demonstration, building a network for professionals of color, and supporting business-based groups that push for change. Francisco raises money for the New Commonwealth Racial Equity and Social Justice Fund, led by Black and brown executives to promote inclusive business practices.



## Pride & Support

NETWORKED FOR CHANGE

### A call to support working parents

Noting the extra burdens that the pandemic has levied on working parents, Northeastern professor Alicia Sasser Modestino called on employers to build better family support systems and offer remote-work options. Speaking at a spring webinar on COVID-19's special impact on women and families, Modestino, an associate professor of public policy, urban affairs, and economics, said her survey of 2,500 working parents shows childcare is not just a family issue, but also a business one.

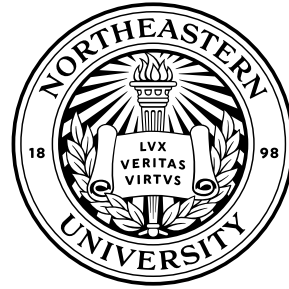


### Promoting community ventures

Northeastern's entrepreneurial spirit was on full display when, around the winter holidays, the university launched in-person and virtual marketplace events that introduced the community to student and alumni-owned businesses. On offer were goods from clothing to books and skincare products, as well as health and wellness services.

LVX  
VERITAS  
VIRTUS





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