IN THE AGE OF AI

LEARNING AND DISCOVERY

IN THE AGE OF AI
In the past year, we have advanced our shared vision of learning and discovery in the age of AI. We built networks of experiences that put human abilities, values, and dreams at the center.

By infusing humanics—our curriculum that integrates technological, data, and human literacies—into learning, we are preparing students to do what intelligent machines cannot: collaborate, generate, create, and empathize.

By making humanity a central focus of our research, we are ensuring that tomorrow’s discoveries in health, security, and sustainability fulfill human needs and aspirations.

We are empowering humans to work together with intelligent machines to cultivate the flourishing communities that the world needs.

My thanks to each of you in the Northeastern community for devoting your human capacities to this collective achievement.

Joseph E. Aoun
President
Gabriela Compagni, SSH’21, discovered new skills and career possibilities during the semester-long Data, Ethics, and Culture program at NCH at Northeastern, in London, focusing on humanics. It was a natural fit for the philosophy major, who pursued her interest in digital technology by taking a minor in data science.

“The program confirmed my interest in the area of technology, ethics, and oversight over technology research. It’s a field that’s growing rapidly and needs attention.”

number of countries where Northeastern has placed students in experiential learning opportunities, up from 60 in 2006
HELPING CANCER PATIENTS PERSONALIZE THEIR TREATMENTS

A Co-op through Northeastern’s CaNCURE program—which exposes students to cancer nanomedicine—set Amanda Stroiney, S’16, on the path to medical school. She worked in radiology at Boston’s Dana-Farber Cancer Institute and took a clinical research position there after graduation. Now at a startup, Stroiney is using her communication skills and understanding of patients’ needs to build an app that delivers personalized treatment information to women with breast cancer. She has set her sights on becoming an oncologist.

Visit accomplishments.northeastern.edu
The Align master’s degree in computer science, designed for bachelor’s degree holders with no computing experience, was just what Andrew Dickens, MS’17, needed to vault into a software engineering position with Amazon.

“Align produces an engineer capable of more than simply writing software. Paring my master’s in computer science with my undergrad, MBA, and previous experience has allowed me to influence projects and add value outside of the engineering context.”

Mariella Hidalgo Del Alamo, MS’19, a native of Peru, enrolled in Northeastern’s master’s program in leadership to fast-forward her career in human resources. Eager for professional experience, she turned to the Experiential Network, which challenges students to complete six-week virtual projects for companies. Working with LearnWell, which provides in-hospital tutoring to school-age patients, Hidalgo Del Alamo became a culturally adept team player—and was soon hired full time as a recruiter. “Now that I have experience working in a new country, in a different language, I can better understand the needs of employees from different cultures,” she says.
HIGH TALENT, HIGH ACHIEVEMENT

90%
of employed 2018 graduates are doing work related to their major.

93%
of graduates are employed full time or in graduate school within 9 months of graduation (10-year average).

外部奖项 for academic excellence won in 2018–2019 by students and recent graduates, with 19 awards supporting global study and leadership.

MARSHALL SCHOLAR LEARNS THE POWER OF ADVOCACY FOR WOMEN’S HEALTHCARE

As a pre-med student, Claire Celestin, S’19, had long aimed to be an advocate for women and children. But doing what, exactly? She found the answer on a co-op working with pregnant women in Peru. Assisting an extraordinary midwife and obstetrician named Ruro, Celestin applied her burgeoning medical knowledge, empathy, communication skills, and adaptability to help women take charge of their own birth experience. Inspired, she is using her Marshall Scholarship to study women’s and children’s health at King’s College London, the plan to become an OB-GYN, giving women the care and support they deserve.

75%
of fall 2019 freshmen ranked in the top 50% of their class, compared to 38% in fall 2006.

1457
Mean two-part SAT score for fall 2019 freshmen, compared to 1230 in fall 2006.
## Research

### AN ENGINE OF DISCOVERY

<table>
<thead>
<tr>
<th>Year</th>
<th>External Research Awards</th>
<th>Increase Since 2006</th>
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<tbody>
<tr>
<td>2006</td>
<td>$178.8M</td>
<td>267%</td>
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<tr>
<td>2007</td>
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<td>2017</td>
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### Experiential PhD Student Harnesses Technology, Social-Science Skills to Gauge Risk Levels

After his country’s leaders were deposed amid scandal in 2014, Brazilian native Lucas Almeida wondered: Could technology be used to expose wrongdoing? At Northeastern, Almeida enrolled in the world’s first PhD program in network science. In 2015, his first year, he joined the LEADERS Program, which challenges students to complete projects at organizations aligned with their research interests. At a startup, Goodlight, Almeida deployed his understanding of complex networks and the dark web to identify red flags for employee misconduct along different dimensions of risk. “Using quantitative and social-science skills,” Almeida says, “I hope to separate real from perceived risks, and bad guys from good.”

Visit [accomplishments.northeastern.edu](http://accomplishments.northeastern.edu)
interdisciplinary institutes, with 3 announced in 2018–2019

INSTITUTE FOR EXPERIENTIAL ROBOTICS
This institute focuses on the development of robots for enriching collective human-robot experiences. Led by Taskin Padir, associate professor of electrical and computer engineering, researchers aim to build safe, secure, and culturally sensitive robots to augment human abilities—whether assisting surgeons in an operation, fostering healthy aging in the home, or enabling Arctic Ocean exploration. Research teams investigate mobility, manipulation, and human-robot collaboration in uncertain environments.

INSTITUTE FOR THE CHEMICAL IMAGING OF LIVING SYSTEMS
At this institute, directed by Heather Clark, a professor of bioengineering and chemistry and chemical biology, researchers are creating new technologies to view and track, in real time, important but currently undetectable biochemicals involved in relaying signals throughout the brain, nervous system, and body. The team’s leading-edge imaging tools will shine a light on how diseases emerge and advance—or retreat in the face of treatment—and will also support a more personalized, targeted approach to drug therapies.

INSTITUTE FOR THE WIRELESS INTERNET OF THINGS
Researchers envision a continuum of AI-powered devices and networks wirelessly connecting people and their environment, from driverless cars and search-and-rescue drones to implantable medical devices and smart cities. The institute, led by Tomasso Melodia, professor of electrical and computer engineering, is home to world-leading expertise, facilities, technologies, and the project office for Platforms for Advanced Wireless Research, a $160 million public-private research effort to equip U.S. cities with advanced IoT testing grounds.

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HUMAN-CENTERED INNOVATION

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DESIGNING ETHICAL AI
Artificial intelligence has an ethics problem. With a grant from Mozilla, three Northeastern professors are combining their expertise to solve it. Christo Wilson (left), an associate professor at the Khoury College of Computer Sciences, is working with Ron Sandor (right), philosophy and religion department professor and chair, and John Basl (center), an associate professor of philosophy and religion, to integrate moral principles into six AI-related courses based on the concept of values-sensitive design. The idea, Wilson says, is to train computer scientists to build ethical values—such as keeping data free of cultural bias—into their design process, whether they’re creating a machine learning algorithm or a mobile app.
EXPANDING A FACULTY OF INNOVATORS

701 tenured and tenure-track hires since 2006, including 45 in 2018-2019

AGENCY AWARDS

Ambika Bajpeey and Jiahe Li
NIH Trailblazer R21 Award for New and Early Stage Investigators
College of Engineering

Ehsan Elhamifar
Army Research Office Young Investigator Award
College of Computer Sciences

Ke Zhang
American Chemical Society Polymer Materials Science and Engineering Young Investigator Award
College of Science

NATIONAL SCIENCE FOUNDATION CAREER AWARD

Javier Apfeld
College of Science

Hui Fang
College of Engineering

Sidi Bencherif
College of Engineering

James Halverson
College of Science

Pau Closas
College of Engineering

Paul Mand
Khoury College of Computer Sciences and College of Science

Eno Ebong
College of Engineering

Babak Heydari
College of Engineering

Ambika Bajpeey and Jiahe Li
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College of Engineering

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Army Research Office Young Investigator Award
College of Computer Sciences

Ke Zhang
American Chemical Society Polymer Materials Science and Engineering Young Investigator Award
College of Science
RECOGNIZING INNOVATIVE THINKERS

FACULTY

SCHOLARSHIPS AND AWARDS 2015-16

FELLOW, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
Kim Lewis
University Distinguished Professor of Biology, Director of the Antimicrobial Discovery Center
Lewis studies bacterial infections, including Lyme disease and MRSA, which he has found evade antibiotics when a subset of “persister” bacteria go dormant, then replicate anew once treatment is stopped. He is recognized for leadership in his field and for advancing the public’s understanding of science.

AMERICAN COUNCIL OF LEARNED SOCIETIES FELLOWSHIP
Heather Streets-Salter
Professor of History
With support from her award and the College of Social Sciences and Humanities, Streets-Salter will complete a book, The Chill Before the Cold War: The Noulens Affair and the Global Struggle Between Communism and Anti-Communism in the Interwar Period.

SLOAN RESEARCH FELLOWSHIP
Christo Wilson
Associate Professor of Computer Science
Wilson is shining a light on how algorithms power the web, popular apps, and social media. He examines the data collected by these tools, exposing their impact on users’ privacy and security. The Alfred P. Sloan Foundation supports promising researchers in STEM fields.

FULBRIGHT AWARD
Julia Hechtman
Assistant Teaching Professor of Art + Design
A visual artist, Hechtman deals with issues of agency and control, absence and presence, and real-time experience in her studio practice. The Fulbright enables her to teach and create new work in Reykjavik at the Icelandic Academy of the Arts.

FORD FOUNDATION SENIOR FELLOWSHIP
Tiffany Joseph
Associate Professor of Sociology and International Affairs
Joseph examines the implications and effects of immigration policy, propaganda and political rhetoric, and localized policy changes that impact immigrant populations. Her award will support work on a new book.

JOHN SIMON GUGGENHEIM MEMORIAL FELLOWSHIP
Lisa Feldman Barrett
University Distinguished Professor of Psychology
A recognized leader in the field of affective neuroscience, Barrett dispels longstanding myths about how the brain works. Her fellowship will enable her to complete Seven Insights About the Brain, a book about how we understand who we are.

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Stephen Ng (right), who earned a master’s degree in mechanical engineering in 2018, co-founded Mobile Pixels with two Massachusetts Institute of Technology alumni. The trio created DUO, a portable secondary monitor that works alongside any laptop to make multitasking easier and more efficient. Mobile Pixels won funding from IDEA, Northeastern’s venture accelerator, and MIT’s Sandbox innovation fund, and was a finalist in the 2018 MassChallenge Boston, a global business accelerator program.

Sophie Gechijian, SSH’16, couldn’t find a nutrition bar that was healthy, tasty, and functional. So she started making her own and launched f(x) foods—“function foods”—in 2018. With a co-packer producing her bars at scale, she sells them in about 20 fitness studios, coffee shops, and boutique markets. At Northeastern, Gechijian got a boost from Mosaic, a network of student-led services that assist entrepreneurs. She received gap funding from the venture accelerator IDEA, while design studio Scout created the f(x) foods website and packaging. And the IP CO-LAB filed her trademark application for her company’s name.

Matteo Rinaldi, associate professor of electrical and computer engineer, and his team—including PhD students Antea Risso (left) and Sila Deniz Calisgan—invented a fire detector with a sensor that will sleep for as long as 10 years until awakened by flames, without needing a battery recharge or replacement. The smart, alert, wireless system could safeguard forests, warehouses, even space habitats or critical or costly to service batteries. He launched his venture, Zepsor, with funding from the Center for Research Innovation.

Visit accomplishments.northeastern.edu
“Julie and I want to help prepare learners for a future in which human, data, and technological literacies will be imperative for success in a world based on innovation rather than resources.”

—Amin Khoury

In December 2018, Northeastern received a gift of $50 million from trustee Amin Khoury, MBA’89, H’19, and his wife, Julie, MBA’89—and named the Khoury College of Computer Sciences in the couple’s honor. The gift will enable the university’s fastest-growing college to promote “computer science for everyone,” says Dean Carla Brodley.

$120.3M in gifts and pledges in 2018–2019
Closing tech’s gender and diversity gaps
Facebook invested $4.2 million in Northeastern’s Align program in computer science, creating 200 scholarships for women and underrepresented minorities while expanding the program to three other universities. Align enables learners with no computer science background to earn a master’s degree in the field.

Preparing tomorrow’s teachers
In 1973, a car accident derailed Bill Simonetti’s dream of becoming a teacher. To honor his passion, his aunt, Mary R. Tornabene, and brother, James Simonetti, endowed the William P. Simonetti Scholarship at the College of Professional Studies. Their gift of $250,000 supports students seeking a master’s degree in education. Bill died in 2018, but his legacy will live on through generations of teachers.

Tackling the opioid crisis
The Laura and John Arnold Foundation donated $832,000 to bolster efforts by Distinguished Professor of Criminology and Criminal Justice Anthony Braga at Northeastern’s Center on Crime and Community Resilience. Braga will partner with law enforcement agencies on better ways to prevent opioid-related deaths, encourage people to seek treatment, and mitigate the harm done to communities by illegal drug use.

In just 24 hours on April 11, 2019, donors made 14,119 gifts to Northeastern, exceeding $1 million—a record-shattering Giving Day. The third annual event supported schools and colleges, student clubs, athletics, and areas of greatest need.
GLOBAL LEADERSHIP SUMMIT IN SHANGHAI

At the second Global Leadership Summit in Shanghai in March 2019, President Joseph E. Aoun convened the Northeastern community and their guests, including artists, business executives, and entrepreneurs. Participants networked, attended panels, and discussed transformational changes in business, technology, and education.

MEN’S ROWING TAKES THE THAMES

After a fifth-in-the-nation finish at the Intercollegiate Rowing Association National Championships in 2019, the men’s rowing team was invited to the Henley Royal Regatta in Henley-on-Thames, England, in July, with generous donors defraying the cost of the trip. Although the Huskies were edged out by Oxford Brookes University in the Temple Challenge Cup Final, they placed first in four races the previous week.

NETWORKED FOR LIFE

In the fall of 2018, Northeastern launched Networked for Life, a celebration to honor alumni volunteers while providing new opportunities for them to donate time and talent through mentoring, governance, philanthropy, and more. Attendees widened their social, professional, and volunteer networks while learning about university leaders’ initiatives and academic plan, Northeastern 2025.

PRIDE & SUPPORT

A CULTURE OF PHILANTHROPY

694 corporations and foundations made gifts and pledges of $49.8M

26,484 individual donors from 95 countries, including 7,727 first-time donors

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BUILDING A LIFELONG COMMUNITY

260,000+ alumni live and work in 179 countries

nearly 11,000 alumni engaged in 40 virtual events and livestreams in 2018–2019

46 global communities

with 3 new communities in Guangdong Province, China; Mumbai, India; and Taipei, Taiwan; and 5 new programs in Chennai, Ho Chi Minh City, Karachi, Kathmandu, and Manama

Connecting at the Source

The NUsource networking platform, launched this year, is weaving connections across Northeastern’s worldwide community. More than 2,000 users from 47 countries—over 70 percent of them alumni—have already tapped NUsource to forge new professional and personal relationships, and keep old ties strong.

Visit accomplishments.northeastern.edu
HELPING LIFELONG LEARNERS SKILL UP

Lifelong learners are calling for industry-aligned experiential education, plus choice and flexibility. In response, Northeastern offered digital badging for select Lifelong Learning On Demand programs that allows students to build credentials through short online courses and workshops while exploring topics like law basics, security and resilience, and innovation.

400+ events were attended by alumni around the globe; more than 60 percent were volunteer-driven.