DOCTOR OF PHILOSOPHY

Hooding and Graduation Ceremony

29 APRIL 2024

CONTENTS

This program is for ceremonial purposes only and is not to be considered an official confirmation of degree information. It contains only those details available at the publication deadline. Please note that not all graduates' names are listed, as some students opt out of having their names appear in Northeastern publications.

A UNIVERSITY ENGAGED WITH THE WORLD

THE HISTORY OF NORTHEASTERN UNIVERSITY

Founded in 1898, Northeastern is a global research university and the recognized leader in experiential learning. Despite the university's current preeminence, Northeastern had modest origins.

At the end of the 19th century, immigrants and first-generation Americans constituted more than half of Boston's population. Chief among the city's institutions committed to helping these people improve their lives was the Boston YMCA. The YMCA became a place where young men gathered to hear lectures on literature, history, music, and other subjects considered essential to intellectual growth.

In response to the enthusiastic demand for these lectures, the directors of the YMCA organized the "Evening Institute for Young Men" in May 1896. Frank Palmer Speare, a well-known teacher and high-school principal with considerable experience in public schools, was hired as the institute's director. Two years later, under Speare's direction, the YMCA advertised the creation of the "Department of Law of the Boston YMCA," and on October 3, 1898, Robert Gray Dodge taught the first class. The program, an immediate success, marked the birth of Northeastern University. Speare would later remark, "We started with an eraser and two sticks of chalk."

When demand for other courses grew, Speare moved to add more programs, and in 1909 the full-time day colleges began instruction. That same year, the Evening Polytechnic School announced "cooperative engineering courses," in which students would have an opportunity to apply classroom knowledge in the workplace—the beginning of Northeastern's signature cooperative education program.

Decades of expansion

The school continued to grow, and in 1922 the College of Business was founded. More space was needed. The university purchased the former home of the Boston Red Sox in 1929, and in 1934 the Boston architectural firm Shepley, Bulfinch, Richardson, and Abbott was awarded the contract to design Richards Hall. Using what was to become the campus signature—white brick—Shepley, Bulfinch presented plans for a neoclassical building. Opened in 1938, Richards Hall was the first building to appear on the front quadrangle.

As the campus grew, so did Northeastern's programs. In 1935, the College of Liberal Arts was added, signaling that Northeastern was on its way to becoming a major university.

When Speare stepped down as president in 1940, he was replaced by Carl Stephens Ell, dean of the College of Engineering. It was under Ell's leadership that Northeastern first admitted women to full-time day programs.

In the postwar world, Northeastern, like its peer institutions, saw a phenomenal increase in the number of people attending college. The university expanded its programs to accommodate this growing population of increasingly diverse students. In rapid succession, additional programs and

colleges were established: College of Education, 1953; University College, 1960; College of Pharmacy, 1962; College of Nursing, 1964; Boston Bouvé College, 1964; College of Criminal Justice, 1967; and College of Computer Science, 1982.

This expansion of programs brought with it a need for more buildings—and land. When Ell retired as president in 1959, he was succeeded by Asa S. Knowles. Under his leadership, suburban properties in Weston, Nahant, and Burlington were acquired and the Boston campus blossomed with new buildings, including various undergraduate dormitories designed to accommodate the increasing number of residential students at what had been primarily a commuter campus.

Transforming the Boston campus

When Knowles retired in 1975, he was succeeded by Kenneth G. Ryder, who had begun his career at Northeastern as a member of the history department and had risen through the ranks to become executive vice president before his election as president. Under his leadership, the university expanded and enriched its programs, particularly in the arts and humanities, and continued to improve its facilities. Plans for the Snell Library were finalized during Ryder's tenure, and the campus was beautified. During these years, Northeastern also deepened its commitment to Boston and its neighborhoods.

In 1989, Ryder stepped down as the fourth president of the university. He was succeeded by John A. Curry, Northeastern's executive vice president and its first alumnus to become president. With President Curry in charge, the university embarked on a series of ambitious undertakings, including a new science and engineering research center, a state-of-the-art classroom building, a recreation complex, and several new graduate and undergraduate programs.

To support these new ventures, Curry led Northeastern in a successful fundraising campaign. His years of leadership also featured significant restructuring as the university prepared to enter its second century. In June 1996, after four decades of service, Curry retired from Northeastern. To succeed him, the trustees elected Richard M. Freeland as the university's sixth president

Elevating experience

A distinguished historian and administrator, President Freeland brought to the university a renewed sense of energy and mission. His programs were designed to support his vision of Northeastern as a university that would be student-centered, practice-oriented, and urban. Northeastern developed the West Campus with architecturally acclaimed residence halls and teaching facilities for the health sciences and computer science, and added new spaces to enrich student life on campus.

When Freeland stepped down in 2006, he was succeeded by Joseph E. Aoun, an internationally known linguistics scholar. Northeastern's seventh president came from the University of Southern California, where he served as dean of the College of Letters, Arts, and Sciences. President Aoun developed an academic plan outlining the university's vision in several areas: experiential learning, global outreach, use-inspired research, urban engagement, and intellectual life. He greatly expanded global co-op opportunities. He also aligned the university's research with three worldwide imperatives—health, security, and sustainability—with a focus on interdisciplinary solutions.

A rising global profile

Under Aoun's leadership, Northeastern launched a system of campuses designed to be platforms for lifelong learning aligned with area economies. The first two opened in Charlotte, North Carolina (2011), and Seattle (2013). Additional campuses followed in Silicon Valley, California (2015), and in Toronto (2016).

In 2016, Aoun led the development of a new academic plan, Northeastern 2025. The plan was a blueprint for transforming the university into a global university system—featuring networks of learners and innovators—designed to empower people to succeed in this era of unprecedented technological change. Accordingly, the university expanded the role of its global campuses to serve as platforms for learning, research, and industry partnerships. In 2019, it opened another location in Vancouver and acquired New College of the Humanities in London, now officially Northeastern University London and offering undergraduates a unique opportunity to earn a dual U.S./U.K. degree. Later in 2019, Northeastern launched a research campus in Arlington, Virginia, an addition to two existing research campuses in Nahant and Burlington, Massachusetts (formed in 1967 and 2012 respectively).

Then in January 2020, technology entrepreneur David Roux and his wife, Barbara, made an investment in the university to open the Roux Institute in Portland, Maine. The institute focuses on graduate studies and research in fields such as AI, digital engineering, and advanced life sciences, amplified by industry partnerships. It was specifically designed to be a model of how higher education can ignite economic development in regions of the country largely bypassed by the innovation economy, setting a new bar for what the global university system could achieve.

Resilience and momentum

The same revolutionary vision for global learning and discovery that inspired Northeastern 2025 infuses the university's latest academic plan, Experience Unleashed. The plan is designed to deepen the impact of Northeastern's global network by maximizing the power of experience to understand and solve the world's interconnected, ever-evolving challenges.

In 2022, the university took a significant step in realizing the potential for its global system by merging with Mills College in Oakland, California, becoming the first university with comprehensive residential campuses for undergraduate and graduate students on both U.S. coasts. Northeastern's Oakland campus is now home to Mills College at Northeastern and the Mills Institute, focused on equity, social justice, and women's leadership. Later in 2022, Northeastern announced its newest campus in Miami, with graduate education and innovation partnerships aligned with South Florida's economic growth.

On October 3, 2023, Northeastern marked its 125th anniversary. The milestone offered an opportunity both to recognize how the entire Northeastern community has been shaped by the power of experience and to herald the next 125 years of world-changing impact. Thanks to the dedication and hard work of our university community, Frank Palmer Speare's "eraser and two sticks of chalk" have evolved into one of the world's most innovative universities. Our faculty collaborates more fluidly with experts across industry, government, and community-based organizations. Ideas and solutions can be scaled. And our students are empowered to be true global citizens, scientists, entrepreneurs, and creators—prepared to make an impact wherever they go.

PROGRAM

Presiding

David Madigan
Provost and Senior Vice President for Academic Affairs

Prelude

Processional

The audience is requested to remain seated during the processional of the graduates and faculty. Upon a signal from the Chief Marshal, the audience will rise and remain standing until instructed to be seated.

Music provided by Northeastern University's brass quintet.
Allen Feinstein, *director*
Nicholas Soares, *trumpet*
Allison Betsold, *trumpet*
Lora Ovcharova, *horn*
Owen Goldner, *trombone*
Austin Comerford, *tuba*

We kindly ask those in attendance to silence their electronic devices.

DOCTOR OF PHILOSOPHY HOODING AND GRADUATION CEREMONY

MATTHEWS ARENA, THREE O'CLOCK

The National Anthem

Olivia Neville
College of Science

Opening Remarks

David Madigan, *Provost and Senior Vice President for Academic Affairs*

Graduation Speaker

Darío Gil

Conferring of Degrees

David Madigan, *Provost and Senior Vice President for Academic Affairs*

Degree in Course

Debra Franko, *Senior Vice Provost for Academic Affairs*

KHOURY COLLEGE OF COMPUTER SCIENCES
Elizabeth D. Mynatt, *Dean*
Amal Ahmed, *Associate Dean*

COLLEGE OF ENGINEERING
Gregory Abowd, *Dean*
Mark Niedre, *Associate Dean*

BOUVÉ COLLEGE OF HEALTH SCIENCES
Carmen Sceppa, *Dean*
Jennifer L. Kirwin, *Associate Dean*

COLLEGE OF SCIENCE
Hazel Sive, *Dean*
Carla Mattos, *Associate Dean*

COLLEGE OF SOCIAL SCIENCES AND HUMANITIES
Kellee Tsai, *Dean*
Jun Ma, *Associate Dean*

Recessional

The audience is requested to remain seated during the recessional. All graduates, guests, and other participants are invited to a reception immediately following the ceremony.

Graduation Speaker
Darío Gil
Graduation Speaker

Few innovation leaders have had greater influence over the two most powerful technologies of the 21st century—quantum computing and artificial intelligence—than Darío Gil, IBM's senior vice president and director of its research lab.

As the head of IBM's ongoing quantum computing project, Gil directed the development of the world's first programmable quantum computers available on the cloud. This achievement was a major milestone in the global competition to realize the practically unimaginable problem-solving potential of quantum computers, which dwarfs that of existing supercomputers.

Under Gil's leadership, his team is building on that success by bringing quantum computing to the scale necessary to make a real impact on the world's most complex puzzles.

Gil also co-chairs the MIT-IBM Watson AI Lab, which pursues fundamental AI research to benefit industry and society. Beyond his research oversight, Gil is a global advocate for keeping advancements in AI universally accessible rather than proprietary. In his role with IBM, he helped found the AI Alliance, an international organization of more than 50 leading companies, universities, government agencies, and research institutions committed to open science and open innovation in AI.

As Gil wrote in a *Fortune* magazine essay announcing the coalition, "AI is too important a technology to be shaped in relative secrecy by a small cast of characters … it is essential that AI's evolution is guided by shared principles, not personalities."

In addition to quantum computing and AI, Gil leads IBM's innovation strategies in hybrid cloud, semiconductors, and exploratory science. He also is responsible for the company's intellectual property strategy and business.

Gil joined IBM in 2003 as a researcher and took on successively more senior roles. Prior to being named to his current posts, he was the chief operating officer of IBM Research and vice president for AI and quantum research.

Gil is co-chair of the executive board of the International Science Reserve, a global network of open scientific communities that provides specialized resources to prepare for and help mitigate urgent, complex global challenges.

He has served on the President's Council of Advisors on Science and Technology and is a current member of the National Science Board, which oversees the National Science Foundation. He also serves on the President's Research Council of the Canadian Institute for Advanced Research, the MIT School of Engineering Dean's Advisory Council, and the Aspen Global Cybersecurity Group.

Gil is on the boards of the Semiconductor Industry Association, the Center for Strategic and International Studies, the New York Academy of Sciences, the New York Hall of Science, and Rensselaer Polytechnic Institute.

He is a member of the National Academy of Engineering. He earned a Bachelor of Science from Stevens Institute of Technology, and his doctorate in electrical engineering and computer science from MIT.

DOCTOR OF PHILOSOPHY CANDIDATES AND DISSERTATION TITLES

KHOURY COLLEGE OF COMPUTER SCIENCES

In the field of Computer Science

Sabbir Ahmad, BS, Bangladesh University of Engineering and Technology; MS, Northeastern University
Dissertation: Towards Interpretable Group Activity Recognition
Advisor: Ehsan Elhamifar

Muhammad Ali, BS, National University of Computer and Emerging Sciences; MS, Saarland University
Dissertation: Measuring the Harms of Personalization Through Advertising
Advisor: Alan Mislove

Ellen Melian Arteca, BSc, Laurentian University; MMath, University of Waterloo
Dissertation: Leveraging Large Code Bases for Bug Detection and Test Generation
Advisor: Frank Tip

Yulia Belyakova, MS, Southern Federal University
Dissertation: Decidable Subtyping of Existential Types for the Julia Language
Advisor: Jan Vitek

Joshua M. Bundt, BS, United States Military Academy; MS, Naval Postgraduate School
Dissertation: Towards Rigorous Evaluation of Binary Testing and Analysis
Advisor: William Robertson

Samuel Logan Caldwell, BS, University of Texas
Dissertation: Reasoning About Actors That Share State
Advisor: Matthias Felleisen

Anamay Chaturvedi, BSc, Indian Institute of Science; MSc, National University of Singapore
Dissertation: Higher Utility Methods for Differentially Private Optimization
Advisor: Huy Nguyen

Alesia Chernikova, BS, Belarusian State University
Dissertation: Towards Resilient Cybernetworks Against Adversarial Attacks
Advisor: Alina Oprea

Benjamin William Chung, BS, Carnegie Mellon University
Dissertation: A Type System for Julia
Advisor: Jan Vitek

Andrew Stephen Fasano, BS, Rensselaer Polytechnic Institute
Dissertation: Dynamic Program Analysis of Embedded Systems
Advisor: William Robertson

Avijit Ghosh, BTech, MTech, Indian Institute of Technology, Kharagpur; MS, Northeastern University
Dissertation: Algorithmic Fairness in the Real World: Challenges and Considerations
Advisor: Christo Wilson

Twinkle Jain, BS, Mohanlal Sukhadia University; MS, M.B.M. University; MS, Northeastern University
Dissertation: Application-Transparent Strategies to Optimize Limited Resources in HPC and Big Data
Advisor: Gene Cooperman

Eysa Lee, BS, University of Texas at Austin
Dissertation: Securely Computing Threshold Variants of Signature Schemes (and More!)
Advisor: Abhi Shelat

Girik Malik, BTech, Shiv Nadar University
Dissertation: Improving Object Tracking and Recognition in Machines With Insights from Biological Vision
Advisor: Ennio Mingolla

Denis Jered McInerney, BS, Johns Hopkins University
Dissertation: An Interface for Clinicians: Finding Crucial Information With Language Models in Electronic Health Records
Advisor: Byron Wallace

Tanay Ketan Mehta, BS, University of Southern California; MS, Northeastern University
Dissertation: Learning and Benefiting from Structured Correlations
Advisor: Ravi Sundaram

Joshua Aaron Miller, BA, Colgate University; MS, Northeastern University
Dissertation: Identifying Problems in Onboarding Design for Expertise-Centric Citizen Science Games
Advisor: Seth Cooper

Sara Mohammad Taheri, MS, Sharif University of Technology
Dissertation: Causal Query Estimation in Partially Observed Biomolecular Networks
Advisor: Olga Vitek

Prasanth Murali, BTech, National Institute of Technology Tiruchirappalli; MS, Northeastern University
Dissertation: Enhancing Affect Communication During Public Speaking With Sensing and Social Biofeedback
Advisor: Timothy Bickmore

Ryan Goff Muther, BS, Union College
Dissertation: Citation-Augmented Text Reuse Detection
Advisor: David Smith

Ngoc Hai Nguyen, BS, Hanoi University of Science and Technology; MS, Northeastern University
Dissertation: Robust and Secure Wireless Communications: A Deep Learning Approach
Advisor: Guevara Noubir

Thy Dinh Nguyen, BSc, Missouri State University
Dissertation: Clustering with Fairness, Privacy, and Predictions
Advisor: Huy Nguyen

Muhammad Talha Paracha, BE, National University of Sciences & Technology Islamabad; MS, Northeastern University
Dissertation: Measurement Techniques to Understand How Diversity in TLS Implementations and Deployments Influences Protocol Security
Advisor: David Choffnes

Artem Pelenitsyn, MS, Southern Federal University
Dissertation: Type Stability in Julia: A Simple and Efficient Optimization Technique
Advisor: Jan Vitek

Yisu Peng, MS, Indiana University
Dissertation: Machine Learning Methods for FDR Estimation in Mass-Spectrometry Proteomics
Advisor: Predrag Radivojac

Willy Quach, MS, Ecole Normale Superieure de Lyon
Dissertation: Advanced Functionalities and Post-Quantum Security Through the Lens of Lattice-Based Cryptography
Advisor: Daniel Wichs

David Yousif Saffo, BS, Loyola University Chicago; MS, Northeastern University
Dissertation: The Mediums, The Masses, The Methods: Towards Meeting the Demands of Immersive Analytics
Advisor: Cody Dunne

Anurag Sarkar, BCA, West Bengal University of Technology; MSc, St. Xavier's College (Autonomous), Kolkata; MS, Northeastern University
Dissertation: Learning Latent Representations for Controllable Combinational Creativity and Game Design
Advisor: Seth Cooper

Eli Zachary Sennesh, BSc, University of Massachusetts Amherst; MSc, Technion Israel Institute of Technology
Dissertation: Towards Compositional Probabilistic Programming
Advisors: Jan-Willem van de Meent and Lisa Feldman Barrett

Niklas Smedemark-Margulies, BA, Amherst College; MMSc, Harvard Medical School
Dissertation: Reducing Calibration Effort for Brain-Computer Interfaces
Advisors: Deniz Erdogmus, Robin Walters, and Jan-Willem van de Meent

Laura South, BS, Colorado State University; MS, Northeastern Unviersity
Dissertation: Designing for Photosensitive Accessibility Across Social, Interactive, and Immersive Digital Platforms
Advisor: Michelle Borkin

David Stalfa, BA, Hobart and William Smith Colleges; MA, Tufts University
Dissertation: Scheduling Under Network Communication Constraints
Advisor: Rajmohan Rajaraman

Alexi Stephane Turcotte, MMath, University of Waterloo
Dissertation: Optimizing Asynchronous JavaScript Applications
Advisors: Frank Tip and Jan Vitek

Akshar Varma, BTech, Dhirubhai Ambani Institute of Information and Communication Technology; MS, Northeastern University
Dissertation: Estimating and Leveraging Graph Parameters via Approximation Algorithms and Machine Learning
Advisor: Ravi Sundaram

Hui Sophie Wang, BS, Zhejiang University; MET, Carnegie Mellon University
Dissertation: A Unified Dynamic Model of Electrodermal Activity
Advisor: Misha Pavel

Hao Wu, BS, Sichuan University; MSc, University of Washington; MSc, University of Virginia
Dissertation: Uncover Structure From Data: Representation Learning Using Deep Generative Models
Advisor: Jan-Willem van de Meent

Ming-Ho Yee, BSE, MMath, University of Waterloo
Dissertation: Predicting TypeScript Type Annotations and Definitions with Machine Learning
Advisor: Arjun Guha

Lydia Zakynthinou, BEng, National Technical University of Athens; MSc, National and Kapodistrian University of Athens
Dissertation: Algorithms and Frameworks for Preventing Privacy Leakage and Overfitting in Machine Learning
Advisors: Jonathan Ullman and Huy Nguyen

In the field of Cybersecurity

Norbert Ludant, BS, MS, Universidad Carlos III de Madrid
Dissertation: Securing Wireless Communications From the Phy Up: A Low-Layer Protocol Approach for Privacy, Security, and Resilience
Advisor: Guevara Noubir

Justin Thomas Raynor, BS, BS, University of Washington; MS, Northeastern University
Dissertation: Cybersecurity Visualization Design: Toward Connecting Research and Practice Methodologies and Approaches Through Technique, Context, and Process
Advisor: Cody Dunne

KHOURY COLLEGE OF COMPUTER SCIENCES AND BOUVÉ COLLEGE OF HEALTH SCIENCES

In the field of Personal Health Informatics

Maciej Rafal Kos, MA, University of Michigan; MS, Barcelona School of Economics
Dissertation: Multidimensional Digital Biomarker of Cognitive Health: Unobtrusive and Continuous Monitoring of Cognitive Changes Using Smartphones
Advisor: Misha Pavel

Teresa Kenyon O'Leary, BA, Smith College
Dissertation: Co-Design and Evaluation of a Smartphone-Based Mental Health Promotion and Anti-Stigma Embodied Conversational Agent for Church-Affiliated Black Adults
Advisor: Timothy Bickmore

Binod Thapa Chhetry, BS, MS, University of Texas
Dissertation: Continuous Measurement of Sleep, Sedentary Behavior, and Physical Activity from Accelerometer Data using Robust Algorithms and Practical Sensing Systems
Advisor: Stephen Intille

COLLEGE OF ENGINEERING

In the field of Bioengineering

Kevin Matthew Bardon, BS, MS, University of Massachusetts Amherst; MS, Tufts University School of Medicine
Dissertation: Contrast Agent Optimization for Improved Photoacoustic Imaging
Advisor: Heather Clark

McKay Morris Cavanaugh, BS, MS, The University of Akron
Dissertation: The Role of Cadherin Mechanotransduction in Defining the Neural Stem Cell Niche
Advisor: Rebecca Willits

Matthew James Eden, BS, University of Massachusetts Amherst
Dissertation: Development of a Murine Model of Wildland Fire Smoke Inhalation: Leveraging Experimental Computational Methods to Investigate Cardiopulmonary Dysfunction
Advisors: Jessica Oakes and Chiara Bellini

Fatemeh Farhangdoust, BS, University of Tehran
Dissertation: Fabrication and Characterization of Electro-Optical Waveguides: Towards Single-Molecule Direct RNA Sequencing
Advisor: Meni Wanunu

Alexander Eric Grath, BS, Rensselaer Polytechnic Institute
Dissertation: Highly Efficient Fibroblast to Endothelial Cell Transdifferentiation Using ETV2 and Sox17
Advisor: Guohao Dai

Noa William Franklin Grooms, BS, University of Florida
Dissertation: Multineuronal C. elegans Model to Investigate Role of CREB in Lesion Conditioning and RAG Transcription
Advisor: Samuel Chung

Fernando Ivich Jr., BS, MS, University of Arizona
Dissertation: Exploring Translational Applications of Diffuse in Vivo Flow Cytometry (DIFC)
Advisor: Mark Niedre

Ryan Robert Jamieson, BS, Boston University
Dissertation: The Development of a Method to Target Pathological Collagen Remodeling as a Therapy for Asthma
Advisor: Harikrishnan Parameswaran

Vineel Kondiboyina, BTech, Pandit Deendayal Energy University; MS, Northeastern University
Dissertation: Cartilage Mechanobiology During Limb Growth
Advisor: Sandra Shefelbine

Wen-Han Lee, BS, Johns Hopkins University; MS, Columbia University
Dissertation: 3D Bioprinting Highly Elastic PEG-PCL-DA Hydrogel With Tunable Biodegradability
Advisor: Guohao Dai

Jacqueline Fullerton Matz, BS, Duquesne University
Dissertation: Vascular and Respiratory Outcomes of Wildland Fire Smoke Inhalation: A Structural and Functional Investigation Using a Murine Model to Understand the Chronic Health Effects of Environmental Pollutants
Advisor: Chiara Bellini

Caroline A. McCormick, BS, MS, Tufts University
Dissertation: Transcriptome-wide Detection and Characterization of Pseudouridine mRNA Modifications Across Diverse Human Cell Lines
Advisor: Sara Rouhanifard

Héctor Adrián Millán Cotto, BS, The Pennsylvania State University
Dissertation: Topical Delivery of Engineered Exosomes for Vitreoretinal Diseases
Advisor: Ambika Bajpayee

Frederick Sebastian, BSE, MS, Arizona State University
Dissertation: Gender-Associated Impact on the Mechanical Properties of the Iris
Advisor: Rouzbeh Amini

Jessica Rae Snyder, BSE, MS, University of Iowa
Dissertation: Bioengineering the Intestinal Niche on a Chip: Investigating Signal Transmission Between the Epithelium and Enteric Neurons
Advisor: Abigail Koppes

Kanika Sanjeev Suri, BE, Mumbai University; MS, Carnegie Mellon University
Dissertation: Lipid Nanoparticle Mediated Oral Delivery of RNA for Inflammatory Bowel Disease
Advisor: Mansoor Amiji

Samar Andrea Tarraf, MS, University of Calgary
Dissertation: Development of a Methodological Framework to Probe Regional Mechanics of the Aneurysmal Ascending Thoracic Aorta
Advisor: Chiara Bellini

Sepideh Tavakoli, MS, Bogazici University
Dissertation: Identification and Perturbation of Pseudouridine Modifications in Human mRNAs
Advisor: Sara Rouhanifard

Shira Tsour, BS, MS, New York University
Dissertation: Post-Transcriptional Amino Acid Substitutions in the Human Proteome
Advisor: Nikolai Slavov

Amber Luna Williams, BS, Miami University
Dissertation: Measurement and Analysis of Rare Circulating Tumor Cell Dynamics With Diffuse in Vivo Flow Cytometry
Advisor: Mark Niedre

Edward Xu, BS, University of California Los Angeles; MS, Northeastern University
Dissertation: Development of Instrumentation and Image Reconstruction Techniques for High-Density Diffuse Optical Imaging of the Human Brain and Breast
Advisor: Qianqian Fang

Mengdi Yang, BS, Hebei Normal University; MS, Northeastern University
Dissertation: Innovative Bioengineering Approaches Development: From Host-Microbiome Crosstalk to Therapeutics Production
Advisor: Jiahe Li

Narges Yazdani, BS, MS, Iran University of Science and Technology; MS, The University of Akron
Dissertation: The Influence of Integrin-Mediated Mechanotransduction on Neural Stem Cell Self-Renewal and Differentiation
Advisor: Rebecca Willits

Chenzhen Zhang, BS, Zhejiang University; MS, Northeastern University
Dissertation: Electrical Charging of Macromolecules for Targeted Delivery to Cartilage for Applications in Diagnostic Imaging and Drug Delivery
Advisor: Ambika Bajpayee

In the field of Chemical Engineering

Benjamin Russell Howell, BS, Ohio University
Dissertation: Engineering Composite Solid Electrolytes and Catholytes for All-Solid-State Lithium Batteries
Advisor: Joshua Gallaway

Olukayode Titus Majekodunmi, BTech, Ladoke Akintola University of Technology; MS, Izmir Institute of Technology
Dissertation: Discontinuous Colloidal Clogging in Tapered Microchannels
Advisor: Sara Hashmi

Derrick Spencer Maxwell, BS, University of Massachusetts Amherst
Dissertation: A Three-Pronged Electrochemical Assessment of Major Technologies Contributing to the Green Energy Circular Economy: Batteries, Electrolyzers, and Fuel Cells
Advisor: Sanjeev Mukerjee

Katelyn Elizabeth Neuman, BE, Stony Brook University
Dissertation: Engineering New Strategies for Peripheral Nerve Repair: Investigating Biophysical, Material, and Cellular Compositions for Next Generation Clinical Applications
Advisor: Ryan Koppes

Kyla Nicole Nichols, BS, Worcester Polytechnic Institute
Dissertation: Modeling Enteric Nervous System Interactions with Surrounding Cell Populations and Metabolites
Advisor: Abigail Koppes

Devyesh Rana, BS, Northeastern University; MS, Cornell University
Dissertation: Carbon Chemical Speciation and Polymerization in Liquid Metals
Advisor: Steven Lustig

Zachary James Rogers, BS, University of California, Davis
Dissertation: Developing Oxygen-Controlling Strategies to Boost Vaccine Immunity and Understand Hypoxic Tumor Responses
Advisor: Sidi Bencherif

Ian Matthew Smith, BS, Worcester Polytechnic Institute
Dissertation: A Primary Intestinal Model to Assay Lymphatic Drug Transport
Advisor: Rebecca Carrier

Alyssa Marie Stavola, BS, Northeastern University
Dissertation: Inhomogeneity in Composite Cathodes in All-Solid-State Lithium Batteries
Advisor: Joshua Gallaway

Krystyna Kelly Traverse, BS, Rensselaer Polytechnic Institute
Dissertation: Development and Application of CRISPR Tools for Engineering Transcriptional Regulation Towards Increasing the Production of Medicinal Alkaloids in Catharanthus Roseus
Advisor: Carolyn Lee-Parsons

Jiaming Xu, BE, Southwest Petroleum University; MS, Northeastern University
Dissertation: Molecular Simulations of Confined Deep Eutectic Solvents for Gas Separations and Liposomes for Drug Delivery
Advisor: Francisco Hung

In the field of Civil Engineering

Nicholas E. Briggs, BS, Purdue University; MS, Northeastern University
Dissertation: Cyclic Seismic Behavior of Concrete-Filled Steel Deck Diaphragms
Advisor: Jerome Hajjar

Jaclyn Mary Gehring, BSc, Union College; MS, Northeastern University
Dissertation: Remote Sensing of Rivers: Applications for Streamflow and Carbon Flux Estimations
Advisors: Edward Beighley and Aron Stubbins

Nazli Rafei Dehkordi, BS, MS, Imam Khomeini International University; MS, Northeastern University
Dissertation: Electrochemically Induced in Situ Degradation of Legacy Munitions and Insensitive High Explosives in Manufacturing Wastewater
Advisor: Philip Larese-Casanova

Reza Salatin*, BS, University of Tabriz; MS, Middle East Technical University
Dissertation: Investigating Alongshore Variability of Nearshore Wave Processes Using Phase-Resolved Wave Modeling and Deep Learning
Advisor: Qin Chen

In the field of Civil and Environmental Engineering

Shayan Hojabri Fouladizadeh, BS, MS, University of Tehran; MS, Northeastern University
Dissertation: Simulation of Contaminant Redox and Removal in Flow-through Electrochemical Water Treatment Systems
Advisor: Akram Alshawabkeh

Alanna Claire Sparagna, BA, Smith College; MS, Northeastern University
Dissertation: Applying Passive Sampling to Study the Transport of Contaminants at Multiple Scales
Advisor: Loretta Fernandez

In the field of Computer Engineering

Neset Unver Akmandor, BS, Bilkent University; MS, Middle East Technical University
Dissertation: Enhancing Motion Planning Efficiency in Dynamic Environments Through Advanced Algorithms for Mobile Robots
Advisor: Taskin Padir

Yunus Bicer, BS, MS, Istanbul Technical University
Dissertation: Inference of Human Intent for HCI and HRI Applications
Advisors: Deniz Erdogmus and Mathew Yarossi

Peiyan Dong, MS, Northeastern University
Dissertation: Software-Hardware Co-Design: Towards Ultimate Efficiency in Deep Learning Acceleration
Advisor: Yanzhi Wang

Yifan Gong, BS, Xidian University; MASc, University of Toronto
Dissertation: Towards Efficient and Trustworthy Deep Learning on the Edge
Advisor: Yanzhi Wang

Cheng Gongye, BS, Shanghai Jiao Tong University; MS, Northeastern University
Dissertation: Hardware Security Vulnerabilities in Deep Neural Networks and Mitigations
Advisor: Yunsi Fei

Mehmet Gungor, BS, Kadir Has University; MS,Clemson University
Dissertation: Optimization of the Usage of Different Memory Typles on Modern FPGAs
Advisor: Miriam Leeser

***** *LEADERs Fellow, awarded the Experiential PhD Leadership Graduate Certificate*

Julian Gutierrez, BS, University of Costa Rica; MS, Northeastern University
Dissertation: Towards Real-Time Safe Flight Paths for Urban Air Mobility
Advisor: David Kaeli

Nathaniel Joseph Hanson, BS, University of Notre Dame; MS, Boston University
Dissertation: Material Informed Robotics – Spectral Perception for Object Identification and Parameter Inference
Advisors: Taskin Padir and Kristen Dorsey

Qing Jin, BS, MS, Nankai University; MS, Texas A&M University
Dissertation: Decoupling Efficiency-Performance Optimization for Modern Neural Networks
Advisor: Yanzhi Wang

Baolin Li, BEng, The University of Manchester; MS, The University of Texas at Austin
Dissertation: Making Machine Learning on HPC Systems Cost Effective and Carbon Friendly
Advisor: Devesh Tiwari

Yuanyuan Li, BS, South China University of Technology; MS, Shanghai Jiao Tong University
Dissertation: Submodularity in Cache Networks
Advisor: Stratis Ioannidis

Chang Liu, BS, Huazhong University of Science and Technology; MS, Carnegie Mellon University
Dissertation: Transfer Learning for Visual Applications
Advisor: Yun Fu

Yukui Luo, BS, Shanghai University of Engineering Science; MS, Illinois Institute of Technology
Dissertation: Securing FPGA as a Shared Cloud-Computing Resource: Threats and Mitigations
Advisor: Xiaolin Xu

Can Qin, BE, Xidian University
Dissertation: Transfer Learning Across Domains, Tasks, and Models
Advisor: Yun Fu

Guillem Reus Muns, BS, Universitat Politecnica de Catalunya; MS, Northeastern University
Dissertation: AI for Communications and Sensing in RF Environments
Advisor: Kaushik Chowdhury

Batool Salehihikouei, BS, K.N. Toosi University of Technology; MS, University of Tehran
Dissertation: Leveraging Deep Learning on Multimodal Sensor Data for Wireless Communication: From mmWave Beamforming to Digital Twins
Advisor: Khaushik Chowdhury

Nasim Shafiee, MS, Shahid Beheshti University
Dissertation: Adversarial Robustness in Fine-Grained Perception
Advisor: Ehsan Elhamifar

Kaustubh Shivdikar, MS, Northeastern University
Dissertation: Enabling Accelerators for Graph Computing
Advisor: David Kaeli

Shweta Singh, BTech, Indira Gandhi Institute of Technology; MTech, Delhi Technological University
Dissertation: A Qualitative Approach for Learning and Detection of Emergent Behaviors
Advisor: Mieczyslaw Kokar

Bruno Souto Maior Muniz Morais, BS, Universidade Federal de Pernambuco; MS, Northeastern University
Dissertation: Enabling Domain Platform Design for Streaming Applications: A Holistic Approach
Advisor: Gunar Schirner

Miead Tehrani Moayyed, MS, Azad University
Dissertation: RF Channel Models for Static and Mobile Scenarios: From Simulations to Models for Large-Scale Emulations
Advisor: Stefano Basagni

Huan Wang, BE, MS, Zhejiang University
Dissertation: Towards Efficient Deep Learning in Computer Vision via Network Sparsity and Distillation
Advisor: Yun Fu

Zifeng Wang, BS, Tsinghua University
Dissertation: Effective and Efficient Continual Learning
Advisor: Jennifer Dy

Yu Yin, BS, Wuhan University of Technology; MS, Northeastern University
Dissertation: Synthetic Data Generator: Understanding Human Face and Body via Image Synthesis
Advisor: Yun Fu

Geng Yuan, MS, Syracuse University
Dissertation: Towards Efficient Deep Neural Network Inference and Training for Ubiquitous AI
Advisor: Yanzhi Wang

In the field of Electrical Engineering

Ali Jamal Al Qaraghuli, BS, MS, University at Buffalo
Dissertation: Enabling Satellite Communication Systems in the Terahertz Band
Advisor: Josep Jornet

Mahshid Asri, BS, Iran University of Science and Technology; MS, Northeastern University
Dissertation: Development of Anomaly Detection and Characterization Algorithms Using Wideband Radar Image Processing for Security Applications
Advisor: Carey Rappaport

Ziqiang Cai, BS, Huazhong University of Science and Technology, MS, University of California Los Angeles
Dissertation: Near-Infrared Optical Modulation by Hybrid Graphene Metasurfaces
Advisor: Yongmin Liu

Justin Andrew Crabb, BS, University of Houston; MS, University at Buffalo
Dissertation: Multiphysics Simulation of Graphene Transistors for On-Chip Plasmonic THz Signal Generation, Modulation, and Detection
Advisor: Josep Jornet

Lin Deng, MS, Lanzhou University
Dissertation: Function Capacity Expansion of Nano-optics via Multiplexing Metasurface
Advisor: Yongmin Liu

Cunzheng Dong, BEng, Tianjin University; MS, Northeastern University
Dissertation: Acoustically Actuated Magnetoelectric Antennas for VLF Communication and Magnetic Sensing
Advisor: Nian-Xiang Sun

Kerem Enhos, BS, MS, Bilkent University
Dissertation: Underwater and Intermedium Wireless Communication Through Software-Defined Networking and Multimodal Systems
Advisor: Tommaso Melodia

Yifan He, BE, Tianjin University; MS, Northeastern University
Dissertation: Magnetic and Magnetoelectric Devices for Communication and Energy Harvesting Applications
Advisor: Nian-Xiang Sun

Hussein Mohamed Elsayed Hussein, BS, MS, Cairo University
Dissertation: Parametric Circuits for Enhanced Sensing and RF Signal Processing
Advisor: Cristian Cassella

Anu Jagannath, MS, The State University of New York Buffalo
Dissertation: Deep Learning at the Edge for FutureG Networks: RF Signal Intelligence for Comprehensive Spectrum Awareness
Advisor: Tommaso Melodia

Mruganka Kashyap, BTech, Indian Institute of Technology Kharagpur; MS, University of California San Diego; MS, University of Wisconsin-Madison
Dissertation: Optimal Decentralized Control With Delays
Advisor: Laurent Lessard

Yuezhou Liu, MS, Northeastern University
Dissertation: Network Optimization for Distributed Machine Learning Over Networks
Advisor: Edmund Yeh

Cooper Augustus Loughlin, BS, Tufts University; MS, Northeastern University
Advisor: Vinay Ingle

Anahita Moradmand, MSc, Northeastern University
Dissertation: Robust Observer Structures and Control Design for Linear and Nonlinear Dynamical Systems With Applications
Advisor: Bahram Shafai

Alfred Patrick Navato, BS, Worcester Polytechnic Institute; MS, Massachusetts Institute of Technology
Dissertation: Enabling Anomaly Detection in Complex Chemical Mixtures Through Multimodal Data Fusion
Advisor: Amy Mueller

Bengisu Ozbay, BS, Bilkent University
Dissertation: Fast Identification via Subspace Clustering and Applications to Dynamic and Geometric Scene Understanding
Advisor: Mario Sznaier

Jaehyeon Ryu, PhD, Northeastern University
Dissertation: Engineering Functional Nanomesh for Advanced Neuroelectronics
Advisor: Hui Fang

Raana Sabri Khiavi, BS, MS, University of Tabriz
Dissertation: Theory and Design of Spatiotemporal Metasurfaces for Comprehensive Control of Light
Advisors: Hossein Mosallaei and Josep Jornet

Kimia Shayestehfard, BS, Shiraz University; MS, Northeastern University
Dissertation: Permutation Invariant Graph Learning
Advisors: Stratis Ioannidis and Dana Brooks

Jiacheng Shi, BS, Tsinghua University; MS, Columbia University
Dissertation: Towards a Programmable, High Speed, and Robust Internet of Underwater Things
Advisor: Tommaso Melodia

Vedant Sumaria, MEE, The Pennsylvania State University
Dissertation: Exploring Micro-Machined Glass Shell Resonators for Sensor Applications
Advisor: Srinivas Tadigadapa

Daniel Uvaydov, BS, University at Buffalo; MS, Northeastern University
Dissertation: Real-Time Spectrum Sensing for Inference and Control
Advisor: Tommaso Melodia

Chuangtang Wang, BS, University of Electronic Science and Technology of China
Dissertation: All-Optical Control of Magnetization in Nanostructures
Advisor: Yongmin Liu

Peng Wu, MS, Northeastern University
Dissertation: Bayesian Data Fusion for Distributed Learning
Advisor: Pau Closas

Ziyue Xu, BS, Anhui University
Dissertation: High Efficiency RF Energy Harvesting and Power Management Circuits Techniques for IoT Applications
Advisor: Aatmesh Shrivastava

Mengting Yan, BE, Beihang University; MS, Northeastern University
Dissertation: Integrated Circuit Design Methods for Temperature-Based Hardware Trojan Detection and Parametric Frequency Division in Next-Generation Systems-on-a-Chip
Advisor: Marvin Onabajo

Jinkun Zhang, BS, Fudan University
Dissertation: Low-Latency Forwarding, Caching, and Computation Placement in Data-Centric Networks
Advisor: Edmund Yeh

Yuexi Zhang, BS, MS, Northeastern University
Dissertation: Human Body and Activity Analysis
Advisor: Octavia Camps

Xuanyi Zhao, BS, Xi'an Jiaotong University; MS, Northeastern University
Dissertation: Micro Acoustic Metamaterials for AlN/AlScN-based RF-MEMS Innovations
Advisor: Cristian Cassella

In the field of Industrial Engineering

Haidong Gu, BS, China University of Petroleum; MS, Rutgers University
Dissertation: Interpretable Multimodal Deep Learning of Complex Systems
Advisor: Chun-An Chou

Yikang Guo, MSc, Beijing Institute of Technology
Dissertation: Facial Expression and Physiological Signals-Based Pain Assessment
Advisor: Yingzi Lin

Yi Han*, BS, China University of Labor Relations; MS, Northeastern University
Dissertation: Natural Language Processing Methods for Eliciting Implicit User Needs From Online Reviews
Advisor: Mohsen Moghaddam

***** *LEADERs Fellow, awarded the Experiential PhD Leadership Graduate Certificate*

Nithesh Bharadwaj Javvaji, BTech, Indian Institute of Technology (Indian School of Mines) Dhanbad; MS, Northeastern University
Dissertation: Exploring Human-AI Interaction Through AI as Play
Advisor: Casper Harteveld

Zhenyuan Lu, BE, Southwest University of Science and Techology; MS, Texas State University; MS, Northeastern University
Dissertation: Supervised and Self-Supervised Representation Learning Applications for Sensory Signals
Advisor: Sagar Kamarthi

Burcu Ozek*, BS, Bilkent University
Dissertation: Uncertainty Quantification in Pain Assessment Through Machine Learning
Advisor: Sagar Kamarthi

Soumyakant Padhee, BTech, Veer Surendra Sai University of Technology; MS, RWTH Aachen University; MS, University of Wisconsin Madison
Dissertation: Dynamics of Innovation in Engineering Design Teams: Complex Network Approach
Advisor: Babak Heydari

Sarvesh Sundaram, BE, Goa University; MS, Northeastern University
Dissertation: Artificial Intelligence to Enable Smart Prognostics and Health Management of Manufacturing Systems for Industry 4.0
Advisor: Ibrahim Zeid

Baris Tezcan, BS, Bilkent University; MS, Northeastern University
Dissertation: Network Interdiction Models for Illicit Operations and Extensions to Human Trafficking
Advisor: Kayse Maass

Hua Zheng, BS, Shandong University; MS, University of Washington
Dissertation: Sample-Efficient Reinforcement Learning and Its Applications
Advisor: Wei Xie

In the field of Interdisciplinary Engineering

Shaima Amiri, MS, American University of Sharjah
Dissertation: The Enabling Technologies Theory for High-Tech Innovation
Advisor: John Friar

Krissy Janelynn Govertsen, BS, Clarkson University; MS, Northeastern University
Dissertation: Measuring Vulnerability to Heat Waves
Advisor: Michael Kane

Yanchao Wang, BS, Wuhan University of Technology; MS, Northeastern University
Dissertation: Understanding Public Health Disparities Through the Lens of Human Mobility Data
Advisor: Qi Wang

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In the field of Mechanical Engineering

Ahmed Mostafa Hafez Abdelaziz*, MSc, Cairo University
Dissertation: Additively Printed Structures and Functional Microelectronic Devices From Liquid Suspensions
Advisor: Ahmed Busnaina

Seyed Ali Alavian, BS, Amirkabir University of Technology; MS, Northeastern University;
Dissertation: Effect of Residual Stress at Particle/Particle Interfaces on Etching Behavior of Cold Sprayed Aluminum Coating
Advisor: Andrew Gouldstone

Daniel Joseph Braconnier, BS, MS, Worcester Polytechnic Institute
Dissertation: Understanding the Role of Interfaces and Microstructure Within Fused Filament Fabricated Thermally Conductive Polymer Composites
Advisor: Randall M. Erb

Salih Duran, BS, Middle East Technical University; MS, Northeastern University
Dissertation: Polymer Cold Spray: Impact and Adhesion Mechanics
Advisor: Sinan Muftu

Zilong Fang, BS, University of Alberta; MS, Northeastern University
Dissertation: Acoustically Levitated Complex Droplets
Advisors: Mohammad Taslim and Kai-tak Wan

Aravind Harilal Meenambika, BTech, MTech, Indian Institute of Technology Madras
Dissertation: Determining Lagrangian Convergence on the Ocean Surface to Delineate Three-Dimensional Material Transport in the Upper Ocean
Advisor: Michael Allshouse

Yutao Jing, MS, Northeastern University
Dissertation: Fully Autonomous Control, Localization, and Navigation System for Multicopters and Their Swarms
Advisor: Jose Martinez-Lorenzo

Zahra Karimi, MS, Northeastern University
Dissertation: Shape Recognition and Corner Points Detection in 2D Drawings Using a Machine Learning Long Short-Term Memory (LSTM) Approach
Advisor: Ibrahim Zeid

Chang Liu, BS, MS, Huazhong University of Science and Technology
Dissertation: The Application of Microwave-Induced Thermoacoustics Wave Imaging in Geological Medium
Advisor: Jose Martinez-Lorenzo

Yang Liu, MS, Huazhong University of Science and Technology
Dissertation: Intelligent Thermal Modulation Induced by Far- and Near-Field Radiative Heat Transfer
Advisor: Yi Zheng

Richard James Nash, BS, University of New Hampshire
Dissertation: Static and Dynamic Behaviors of Bio-Inspired Auxetic Tensegrity Sutural Tessellations
Advisor: Yaning Li

Amir M. Taqieddin, BS, Jordan University of Science & Technology; MS, Northeastern University
Dissertation: Electrochemical and Carbon-Based Systems for Water Treatment, Climate Solutions, and Energy Applications
Advisor: Akram Alshawabkeh

Milad Tatari, BS, K. N. Toosi University of Technology; MS, University of Tehran; MS, University of Nevada, Reno
Dissertation: Mechanical Design and Characterization of Biomimetic Systems and Functionally Graded Curved Beams With Applications
Advisor: Hamid Nayeb-Hashemi

Duo Wang, BS, Shanghai Jiao Tong University; MS, Purdue University
Dissertation: Car-Following Dynamics with Multiple Delays; Network Design Strategies for Reduced Traffic Jams
Advisor: Rifat Sipahi

Yihao Xu, BS, Shanghai Jiao Tong University
Dissertation: Control of Light at Nanoscale by Intelligently Designed Artificial Metasurfaces
Advisor: Yongmin Liu

Yuan Yao, BS, Beihang University; MS, Northeastern University
Dissertation: On the Combustion Parameters of Coal, Biomass, and Iron, Burning Either As Isolated Particles or in Groups of Particles
Advisor: Yiannis Levendis

BOUVÉ COLLEGE OF HEALTH SCIENCES

In the field of Counseling Psychology

Babatunde Osawaru Aideyan, BA, Emory University; MA, Northwestern University
Dissertation: Machine Learning Classification of Retinal Imaging of Neuropsychiatric and Healthy Cases in a Subset of the UK Biobank Cohort
Advisor: Jessica B. Edwards George

Jaylan Abd O Elrahman, BA, Wellesley College; MEd, Harvard Graduate School of Education
Dissertation: Twisted Tongues: The Psychological Impact of Language Attrition Among Second Generation Immigrants in the U.S and Implications for Counseling Psychology
Advisor: Tracy Robinson-Wood

In the field of Human Movement and Rehabilitation Sciences

Khara James, BS, MS, University of Pittsburgh
Dissertation: Developing Gait Modification Strategies to Improve Knee Joint Loading and Clinical Outcomes in Adults With Knee Osteoarthritis
Advisor: Joshua Stefanik

Alaina Jayne Martens, BS, Texas Christian University; MS, University of Nebraska-Lincoln
Dissertation: Non-Nutritive Suck as a Window into Infant Development: Unraveling the Implications of NNS Through the Understanding of 1) Typical NNS Patterning, 2) Variations Across Populations (Cleft Lip and Palate), and 3) Connections to Neurodevelopmental Outcomes
Advisor: Emily Zimmerman

In the field of Medicinal Chemistry

Ami H. Asakawa, BS, Pace University
Dissertation: Lead Optimization of 1,2,3,4-Tetrahydroacridin-9(10H)-ones and Development of QSAR Models for Antimalarial Drug Discovery
Advisor: Roman Manetsch

Fei Tong, MS, Northeastern University
Dissertation: Design, Synthesis, and Biological Evaluation of Endocannabinoid Analogs
Advisor: Alexandros Makriyannis

In the field of Nursing

Michael Andrew Miller, BS, Virginia Commonwealth University; BSN, University of Virginia; MSN, Northeastern University
Dissertation: Dispositional Mindfulness and Its Relationship to Preoperative Anxiety and Postoperative Pain in Adult Females Undergoing Surgery
Advisor: Maria Van Pelt

Cynthia Orofo, BSN, Northeastern University
Dissertation: Evaluation of a Clinically Integrated Community Health Worker Program to Support Adults With Cardiovascular Conditions
Advisor: Neha Gothe

Celsea Catherine Tibbitt, BSN, Northeastern University
Dissertation: Understanding Sleep Deficiencies During Pregnancy for Black Women
Advisor: Valeria Ramdin

In the field of Pharmaceutical Sciences

Shwetha Iyer, BS, Mumbai University; MS, Northeastern University
Dissertation: Sustained Intraocular Delivery of Anti-VEGF Antibody for Age Related Macular Degeneration
Advisor: Mansoor Amiji

Matthew Ryan Sullivan, BS, University of New Hampshire
Dissertation: Development of Integrated Single Cell Platform of Lymphocyte Phenotyping, and Immunotherapy Validation in Single Cell and 3D Droplet Microfluidic Systems
Advisor: Tania Konry

Satya Siva Kishan Yalamarty*, MS, Cleveland State University
Dissertation: Co-Delivery of siRNA and Chemotherapeutic Drug Using 2C5 Antibody-Targeted Dendrimer-Based Mixed Micelles for Multidrug Resistant Cancers
Advisor: Vladimir Torchilin

In the field of Pharmacology

Dalal A. AlKhelb, BS, King Saud University; MS, Tufts University
Dissertation: Interactions Between Cannabinoid and Opioid Systems: Behavioral and Physiological Effects of Cannabinoid Ligands and Fentanyl in Rodents
Advisor: Alexandros Makriyannis

Khushbu Kirti Bhatt, BPharm, Mumbai University; MS, Northeastern University
Dissertation: Oxygen-Releasing Cryogels: A Novel Approach to Counter Hypoxia-Induced Suppression of Dendritic Cells and Boost Cancer Vaccine Immunogenicity
Advisors: Sidi Bencherif and Michail Sitkovsky

Nicholas Ronald Fragola, BS, BS, University of Massachusetts Amherst
Dissertation: Molecular Pharmacology of Novel 2-Aminotetralins Targeting Alpha2-Adrenergic G-Protein Coupled Receptors
Advisor: Raymond Booth

Ryan Patrick McGlynn*, BS, University of Pittsburgh
Dissertation: Molecular Pharmacology of Novel Aminotetralins and Known Drug Candidates at 5-HT1-Type Receptors
Advisor: Raymond Booth

***** *LEADERs Fellow, awarded the Experiential PhD Leadership Graduate Certificate*

Dhaval Minesh Oza, BPharm, Gujarat Technological University; MS, Northeastern University
Dissertation: Large Peritoneal Macrophage Tropism Towards Acute Injury and Its Potential for the Treatment of Acetaminophen-Induced Liver Toxicity
Advisor: Mansoor Amiji

In the field of Population Health

Lorraine Julie Lacroix-Williamson, BS, Boston University; MPH, Rutgers University
Dissertation: Pleasure as Prevention: Leveraging a Sex-Positive Approach to Mitigate Sexual and Reproductive Health Outcomes Among Black Women
Advisor: Beth Molnar

Ngoc Hong Thai, BS, Truman State University; MS, University of Massachusetts Amherst
Dissertation: Hospital-Physician Integration: Implications for Physician Payment Policies and Patient Outcomes
Advisor: Gary Young

Michael P. Williams, BS, BA, University at Buffalo
Dissertation: Neighborhood and Digital Immersion Effects on Prep Adherence Through a Digital Intervention in Young Sexual and Gender Minorities Who Have Sex With Men
Advisor: Justin Manjourides

COLLEGE OF SCIENCE

In the field of Biology

Rachel Virginia Bargabos, BS, University of Rochester
Dissertation: Functional Elucidation of Photorhabdus Produced Small Molecule Antimicrobials Against E. coli and B. burgdorferi
Advisor: Kim Lewis

Alexander Grove Belden, BS, Tufts University; MA, Wesleyan University
Dissertation: Functional Network Dynamics of Music Listening and Effects of Age
Advisor: Psyche Loui

Merlin Brychcy, BS, MS, Leibniz Universität Hannover
Dissertation: Insights on Acinetobacter Baumannii Cell Attachment
Advisor: Veronica Godoy-Carter

Fausto Capelluto*, BS, Northeastern University
Dissertation: Elucidating the Consequences of Mitochondrial Heterogeneity on Cell Fate Determination
Advisor: Dori Woods

Wangfang Hou, BS, Beijing University; MS, Drexel University
Dissertation: Investigating Involvement of Mitochondrial Amidoxime-Reducing Components in Nash Disease
Advisor: Tovah Day

Leticia Mara Lima Angelini*, BS, Sao Paulo State University
Dissertation: The Role and Regulation of Pulcherrimin During Bacillus Subtilis Biofilm Development
Advisor: Yunrong Chai

David Jan Lubkowicz, BSc, MSc, University of Applied Sciences Vienna
Dissertation: Engineered Escherichia Coli Nissle 1917 for the Prevention of Uremic Toxin Accumulation in Chronic Kidney Disease
Advisor: Kim Lewis

Casey Jean Lumpkin, BS, Gettysburg College; MS, University of Delaware
Dissertation: Broad Proteomics Analysis Using in Vitro Models of Parkinson's Disease Show Molecular Signatures Associated With Disease Progression and Identify Potential Therapeutic Targets
Advisors: Dori Woods and Brinda Ravikumar

Ryan C. Murray, BS, MS, Northeastern University
Dissertation: Design and Characterization of Car-T Cells Genetically Resistant to Multifactorial Solid Tumor Immunosuppression
Advisor: Stephen Hatfield

***** *LEADERs Fellow, awarded the Experiential PhD Leadership Graduate Certificate*

Brian Hieu Nguyen*, BA, Boston University
Dissertation: Regulation of Error-Prone DNA Polymerases in Acinetobacter Baumannii
Advisor: Veronica Godoy-Carter

Shane William O'Brien, BS, Millersville University; MS, West Chester University
Dissertation: Investigating the Potential of Epigenetics Therapies and Combinations for the Treatment of Cancers
Advisor: James Monaghan

Jacqueline Panigel, BS, The Pennsylvania State University; MS, Lehigh University
Dissertation: Identification of Novel Immune Mechanisms That Play a Role in the Pathogenesis of Androgenetic Alopecia
Advisor: James Monaghan

Nicole Elisabeth Raustad, BS, University of Massachusetts Boston
Dissertation: A Phosphorylation Relay Governing Resistance and Virulence in Acinetobacter Baumannii
Advisor: Edward Geisinger

Joseph Salvatore Spina Jr., BA, Colgate University; MS, Tufts University
Dissertation: Systems and Tools to Target Cellular Senescence in the Context of Fibrotic Lung Disease
Advisors: Tovah Day and William Housley

In the field of Chemistry

Daniel Marco Adrion, BS, State University of New York at Binghamton
Dissertation: Towards Mechanistic Understanding of Thermal and Photochemical Reactivity of Light-Responsive Organic Molecules
Advisor: Steven Lopez

Kelly Kerry Barnsley, BS, Worcester Polytechnic Institute
Dissertation: Queering the QM/MM Binary: Explaining the Unreasonable Efficiency of P. Putida and Probing the Mechanism of ERK2 via Hybrid Calculations
Advisor: Mary Jo Ondrechen

Jiansong Cai, BS, Wuhan University; MS, University of Southern California
Dissertation: Integrating Synthetic Polymers and Oligonucleotides via Organic Phase (Co)polymerization of Chemically Protected Oligonucleotides
Advisor: Ke Zhang

Peiru Chen, BE, Beijing University of Chemical Technology; MS, University of Akron
Dissertation: Advancing Oligonucleotide Therapeutics: Novel Delivery Strategies Explored Through Polymer Conjugates
Advisor: Ke Zhang

***** *LEADERs Fellow, awarded the Experiential PhD Leadership Graduate Certificate*

Christina Ng Di Marco, BA, BS, MS, University of Virginia
Dissertation: Cytotoxicity Targeting Chimeras (CyTaCs) and Their Application Towards Tumor Associated Antigens
Advisor: Roman Manetsch

Amanda Marie Figueroa-Navedo, BS, MA, University of Puerto Rico Mayaguez
Dissertation: Development of Data Analysis Approaches to Increase the Specificity and Performance of Thermal Shift Assays for Assessment of Protein-Small Molecule Interactions
Advisor: Alexander Ivanov

Suhasini Iyengar, BSc, Mumbai University; MSc, Institute of Chemical Technology
Dissertation: Applications of Molecular Modeling Techniques to Drug Discovery and Structural Genomics: Development of Molecular Probes for Neurological Disorders and SARS-CoV-2
Advisor: Mary Jo Ondrechen

Mintesinot Kassu*, BS, University of Rochester
Dissertation: Alternative Drug Discovery Platforms for the Identification of Anti-Infectious Disease Agents
Advisor: Roman Manetsch

Nicole Irene Langlois*, BS, BS, University of New Haven
Dissertation: Analytical Investigations of Biostability and Performance: From Dynamic DNA Nanostructures to Therapeutic Antibodies
Advisor: Heather Clark

Monica Ojeda, BS, Agnes Scott College
Dissertation: Allosteric Interactions in KRas and HRas: Studies of KRas/Calmodulin and HRas/Raf-RBD
Advisor: Carla Mattos

Clifford Gordon Phaneuf, MS, Northeastern University
Dissertation: Experimental Strategies for Improved Target Identification Using Mass Spectrometry-Based Thermal Stability Assays
Advisor: Alexander Ivanov

Michael Jeffrey Schwabe, BA, University of San Diego
Dissertation: Allostery and Protein Dynamics Within Ras and Rho Small GTPases
Advisor: Carla Mattos

Arnik Sunil Shah, BS, University of Mumbai; MS, Northeastern University
Dissertation: Characterization of Critical Quality Attributes (CQAs) for Bispecific Antigen Binding Biotherapeutic (BABB) Through Comprehensive Analysis Using Separation Techniques and Footprinting Approaches Coup
Advisor: Alexander Ivanov

***** *LEADERs Fellow, awarded the Experiential PhD Leadership Graduate Certificate*

Xianyi Su, BS, Wuhan University of Technology
Dissertation: Enhanced Proteomics Profiling of Human Plasma-Derived Extracellular Vesicles Through Charge-Based Fractionation: Advancing Biomarker Discovery Potential
Advisor: Alexander Ivanov

Erin Elizabeth Tuttle, BS, Rensselaer Polytechnic Institute
Dissertation: Photic Zone Plastic: Isolation of Microplastics in Environmental Samples and Improved Understanding of Their Fate in Water
Advisor: Aron Stubbins

In the field of Marine and Environmental Sciences

Karen Elizabeth Aerni, BS, Carnegie Mellon University
Dissertation: Evaluating the Social-Ecological Consequences of U.S. Atlantic Coast Salt Marsh Mosquito Ditching as Quantified by Artificial Intelligence
Advisor: David Kimbro

James Joseph Corbett, BA, Brown University
Dissertation: Evolution of Plasticity, Local Adaptation, and Community Dynamics in Response to Predator Invasions and Increased Seawater Temperatures
Advisor: Geoffrey Trussell

Brian Russell Donnelly Jr., BS, Villanova University
Dissertation: Tidal Wetland Microbial Community Responses to and Recovery From Climate-driven Environmental Change
Advisor: Jennifer Bowen

Kelsey Marie Schultz, BS, The Ohio State University; MS, Northeastern University
Dissertation: Addressing Constraints to Shellfish Aquaculture Through Quantification of Ecosystem Services, Public Perceptions, and Stakeholder Networks in the Eastern United States
Advisor: Jonathan Grabowski

In the field of Mathematics

Jiewei Feng, MS, Northeastern University
Dissertation: Asymptotic Behaviors of a Random Graph Model of Distributed Ledgers
Advisors: Christopher King and Ken R. Duffy

Ziyue Zhang, BS, Nanjing University
Dissertation: Advanced Deep Learning-Assisted Side-Channel Attack Framework and Transfer Learning
Advisor: Adam Ding

In the field of Network Science

Zachary Fulker, BS, University of Pittsburgh
Dissertation: Self-organizing Social Systems: The Boundaries of Cooperation and Coordination
Advisor: Christoph Riedl

Harrison Truett Hartle, BS, University of Alaska Fairbanks
Dissertation: Entropy and Dynamics of Random Networks
Advisor: Dmitri Krioukov

Benjamin Andrew Miller, BS, MS, University of Illinois Urbana-Champaign
Dissertation: Vulnerability and Robustness in Artificial Intelligence for Complex Networks
Advisor: Tina Eliassi-Rad

In the field of Physics

Hongwei Chen, BS, Chongqing University
Dissertation: Machine Learning and High Performance Computing in Numerical Simulation of Quantum Many-Body Systems
Advisor: Adrian Feiguin

Saroj Dhakal, BSc, MSc, Tribhuvan University; MS, Ohio University
Dissertation: Dynamic Mean-Field Model of Voltage-Calcium Dynamics in Cardiomyocytes
Advisor: Alain Karma

Junxiang Huang*, BS, Wuhan University; MS, Xiamen University
Dissertation: Phase Transitions in Biological Tissue Mechanics
Advisor: Dapeng Bi

Jingyan Li, BS, Lanzhou University
Dissertation: Search for Charged-Lepton Flavor Violation in the Production and Decay of Top Quarks at $sqrt{S}$ = 13 TeV with the CMS Detector
Advisor: Louise Skinnari

Luning Lu, MS, University of Cincinnati
Dissertation: A Journey to Full-Length Protein Sensing Technology: Enzyme-Free Protein Transport Through a Biological Nanopore on a Synthetic Polymer-Based Platform
Advisor: Meni Wanunu

Matthew E. Matzelle, BS, The City College of New York; MS, Northeastern University
Dissertation: Anomalous Intense Coherent Secondary Photoemission and Antiferromagnets: Spintronic Applications, Topological Insulators, and Superconductors
Advisor: Arun Bansil

Laxmi Kumari Pandey, MSc, Tribhuvan University
Dissertation: Study of Water, Ion, and Molecular Transport Through Two-Dimensional Nanoconfinements
Advisor: Meni Wanunu

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Mohammad Mahdi Torkashvand, BS, Sharif University of Technology; MS, Northeastern University
Dissertation: Functional Imaging of the C. Elegans Nervous System at Cellular-Resolution: Tools, Pipelines, With Applications to Feeding Behavior and Sexually Dimorphic Whole-Brain Activity
Advisor: Vivek Venkatachalam

Kai Zhang, BS, University of Minnesota Twin Cities
Dissertation: Advancing Towards Open-Source Biophotonic Instrumentation for Multiphoton Imaging and Photodynamic Therapy
Advisor: Bryan Spring

Pengyu Zheng, BS, China University of Geosciences
Dissertation: Chromatic Time-Resolved Monitoring of Single Entities: From Nanoscale Transport Across Channels to DNA Sequencing
Advisor: Meni Wanunu

Tianyi Zhou*, BS, Nanjing Normal University; MS, Brown University
Dissertation: Clinical Translation of Quantitative Ultrashort Time-to-Echo Contrast Enhanced MRA Technique in Renal Imaging
Advisor: Sridhar Srinivas

In the field of Psychology

Danlei Chen, BS, University of Rochester; MS, Northeastern University
Dissertation: Investigating the Involvement of Human Superior Colliculus in Cognition Using Ultra-High Field 7-Tesla fMRI
Advisor: Lisa Feldman Barrett

Lauren Elizabeth Granata, BA, Johns Hopkins University; MS, Northeastern University
Dissertation: Behavioral and Biological Regulators of Hypervigilance Following Early Life Adversity
Advisor: Heather Brenhouse

Jacob William Gurera, BA, BA, BA, University of Missouri-Kansas City; MS, Northeastern University
Dissertation: Emotion Regulation Failures in Younger and Older Adults
Advisor: Derek Isaacowitz

Sade C. Iriah*, BS, MPH, Northeastern University
Dissertation: The Neurological and Behavioral Effects of Opioids
Advisor: Craig Ferris

Shanyu W. Kates, BS, Northeastern University; MA, San Francisco State University
Dissertation: Gratitude Expressions in the Workplace
Advisor: David DeSteno

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Catherine Anne Nielson, BS, Brigham Young University; MS, Northeastern University
Dissertation: Is This About Me? Understanding the Impact of Anthropocentrism on Undergraduate Biology Learning
Advisor: John Coley

Yiyu Wang, BS, University of Washington; MS, Northeastern University
Dissertation: Variability in Neural Representations of Fear: Insights from Computational Modeling
Advisor: Ajay Satpute

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Dissertation: Latinx Workplace Violence, Victimization, and Harm
Advisor: Amy Farrell

Stephen David Douglas, BS, University of Ulster; MS, Northeastern University
Dissertation: Understanding Problem Places: Risky Facilities, Place Managers, and Persistent Crime Hot Spots
Advisor: Brandon Welsh

Madison Binay Gerdes, BA, Vanderbilt University; MS, Northeastern University
Dissertation: The Framing of Mass Public Shootings: Politicians, Press, and the Public
Advisor: James Alan Fox

Sarah Taylor Lockwood, MS, Northeastern University
Dissertation: Sex Trafficking of Male Victims: How We Understand the Issue and Our Responses
Advisor: Amy Farrell

Keller G. Sheppard, MS, Northeastern University
Dissertation: Fatal Police Use of Force: Cameras, Communities, and Crime Reporting
Advisor: Gregory Zimmerman

Maja Milana Vlajnic, BA, BA, MA, University of Maryland, College Park
Dissertation: The Effects of Multiple Marginalization on Domestic Violence Victimization
Advisor: Ekaterina Botchkovar

Andrea Beth Wexler, BS, Brandeis University; MA, Massachusetts School of Professional Psychology
Dissertation: The Sex Offender Registry: Examining Offender Perspectives, and the Consequences and Correlates of Failing to Register as a Sex Offender
Advisor: Carlos Cuevas

In the field of Economics

David Wayne Hummel III, BS, The Ohio State University; MS, Northeastern University
Dissertation: 3 Essays on Applied Microeconomics
Advisors: John Kwoka, Bilge Erten, and Imke Reimers

Yanli Liu, MS, University of California, Los Angeles
Dissertation: Essays on the Impacts of Reputation/Information on Market Efficiency With Digitization
Advisor: Imke Reimers

Yushuo Pan, MA, Northeastern University
Dissertation: Estimating the Demand for Differentiated Products and the Efficiency of the Production Line
Advisor: James Dana

Tomer Brooks Stern, BA, Hampshire College
Dissertation: Applied Microeconomic Insights: Occupational Licensing, Employer Concentration, and Social Movements
Advisor: Mindy Marks

In the field of English

Abbie Levesque DeCamp, BA, Lesley University
Dissertation: Queer Memes: Forms and Communities of Composition
Advisor: Ellen Cushman

Rachel Elvira Molko, BA, Florida State University; MA, University of Central Florida
Dissertation: Practicing Feminist Rhetorical Citizenship: Iconic Articulations of Solidarity, Self-Awareness, and Subversion
Advisor: Elizabeth Britt

Alanna Maria Prince, BA, Bates College; MA, Northeastern University
Dissertation: Luminous Black: On Making Time, the World, and the Self in Black Women's Poetry
Advisor: Nicole Aljoe

Eamon Schlotterback, BA, New York University; MA, Northeastern University
Dissertation: Trans Autopoetics: Reimagining the Human in Transgender Life Writing
Advisor: Hillary Chute

In the field of History

Huseyin Kurt, BA, Istanbul University; MA, Binghamton University; MA, Hartford Seminary
Dissertation: Strategies of Survival: Popular Piety and Subaltern Publicity of Islamic Revival in Early Republican Turkey, 1925–1960
Advisor: Heather Streets-Salter

Molly Elisabeth Nebiolo, BA, Butler University; MA, Northeastern University
Dissertation: Constructing Health: Concepts of Well-Being in Early Atlantic Cities
Advisor: Christopher M. Parsons

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Dissertation: Pasts and Futures: A History of Radical America, 1967–1987
Advisor: Timothy Brown

In the field of Law and Public Policy

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Dissertation: Protests Over Power: The Intermediate Dispossession Regime of UMPPs in India-Case of Telaiya UMPP in Jharkhand
Advisor: Gavin Shatkin

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Anastasja Abraham, BA, BS, University of New Haven; MA, Northeastern University
Dissertation: The Great Divide: Lost Cause Syndrome and American National Identity
Advisor: Amilcar Barreto

Giuliano Joseph Espino, BA, Framingham State University; MA, Northeastern University
Dissertation: Steroids, Plastic, and Psychedelics: The Interlinking of Epistemic Coalition Infighting and Domestic Perception in Creating Third-Order Policy Change
Advisor: Mai'a Cross

Justin K. Haner, BA, BS, BA, Northeastern University
Dissertation: Organizing Peace: An Algorithmic Analysis of Four Centuries of International Law on the Decline of War
Advisor: Mai'a Cross

Sasha Volodarsky, BA, Tel-Aviv University, MA, Reichman University
Dissertation: The Impact of Social Model Factors on Voting Behavior: Uncovering and Capturing Bloc Predisposition
Advisor: Emily Clough

In the field of Public Policy

Forrest Hangen, BA, University of Rochester; MPP, Northeastern University
Dissertation: The Financial Motives and Legal Responsibilities of Landlords: Using Urban Informatics to Model Landlords' Management Strategies
Advisor: Daniel O'Brien

Gloria May Schmitz, BA, University of Illinois Urbana-Champaign; MA University of Miami
Dissertation: The Circular Economy Before and During the Covid-19 Pandemic: A Global Analysis of the Role of Waste Proliferation and Climate Change Resilience
Advisor: Daniel Aldrich

Yutong Si, BA, MPA, Southeast University
Dissertation: Energy Justice, Energy Policy, and Transformative Climate Action
Advisor: Jennie Stephens

Marisa Celia Sotolongo, BS, Massachusetts Institute of Technology; MS, Northeastern University
Dissertation: Environmental Justice Policy in the United States: Material Conditions and Decision-Making Power in Vulnerable and Overburdened Communities
Advisor: Jennie Stephens

In the field of Sociology

Taylor Harris Braswell, BA, Georgia State University; MA, Saint Louis University
Dissertation: The Historical Urban Political Economy of Community-Owned Electric Utilities in the Southeastern United States
Advisor: Liza Weinstein

Tibrine S. Da Fonseca, BA, Simmons University; MA, Northeastern University
Dissertation: Examining Immigrant-Led Urban Health Activism as Place-Making—Countering the Logics of Immigrant Exclusion
Advisor: Alisa Lincoln

Naomi Darom, MA, The Hebrew University; MA, Northeastern University
Dissertation: Has Anything Really Changed? Mothers Negotiating Generational Sexual and Gendered Cultures
Advisor: Linda Blum

Emilie Falguieres, MA, Northeastern University
Dissertation: Untangling Processes in the Diffusion of Innovative Practices: Slut Walks, Gender Equity Strategies, and COVID-19 Vaccines
Advisor: Ineke Marshall

Isabel Araceli Geisler, BA, University of Maryland, Baltimore County; MA, Northeastern University
Dissertation: The Movement Against Feminicidio in Puerto Rico: Expanding the Frontiers of Policies and Activism Against Gender-Based Violence
Advisor: Valentine Moghadam

Rebekah Lorenz Getman, AB, MEd, Harvard University
Dissertation: Uncertain Institutions: Policy, Risk, and Reward in Childbirth During COVID-19
Advisor: Alisa Lincoln

Marhabo Saparova, BA, Selcuk University; MA, Sabanci University; MA, Central European University
Dissertation: Gender, Power, and Mobility in the Post-1990s Labor Migration From Turkmenistan to Turkey
Advisor: Nina Sylvanus

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PROGRAM NOTES

HISTORICAL NOTES ON ACADEMIC DRESS

Academic dress appears to have originated at the universities of Oxford and Cambridge more than 600 years ago, and, to this day, the most colorful gowns in the world are those worn at Oxford functions. European institutions show great diversity in their academic costume, since each adopted or initiated its own dress.

In contrast, American colleges and universities follow a single system of academic apparel. In 1894, a group of leading American educators met to draft guidelines on apparel. Known as the Intercollegiate Code, these guidelines were adopted the following year and amended slightly in 1932.

The distinctions set up by the Intercollegiate Code are simple. Gowns for the bachelor's degree are to be fashioned from "worsted stuff" with a yoke, pleated front, and intricate shirring across the shoulders and back. Worn closed, the bachelor's gown is distinguished primarily by its long, pointed sleeves. The master's gown has the same yoke effect and long, crescent-shaped sleeves; it may be worn open or closed.

The doctor's gown, which may also be worn open or closed, has velvet panels draped around the neck. Three horizontal velvet bars are stitched on full bell-shaped sleeves. This velvet trimming may be black or in the color that indicates the field of study to which the degree refers.

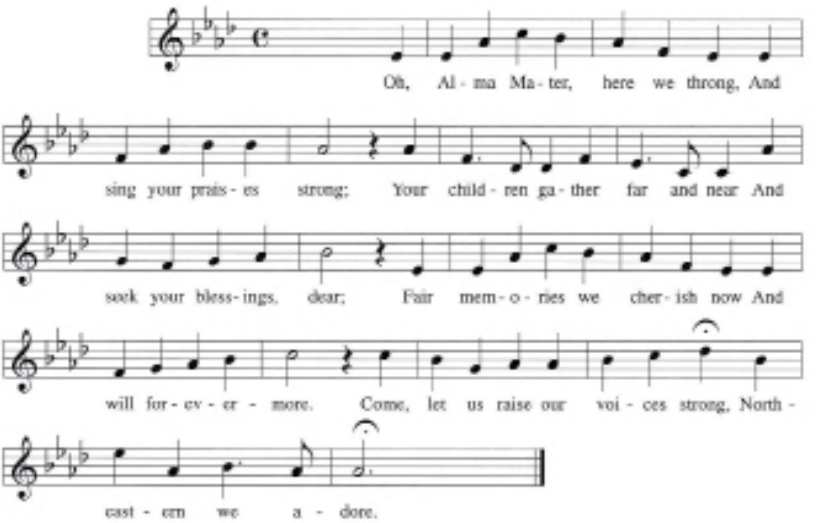
Northeastern University's distinctive doctoral gown is crimson with black velvet panels and sleeve bars. The crimson cap, or mortarboard, bears a gold metallic tassel. In accordance with academic custom, recipients of the doctor's degree, members of the university's governing boards, and government officials in the procession are entitled to wear the official regalia.

The bachelor's and master's hoods have a similar shape, while the doctor's hood has a rounded base. The length of the hood indicates the level of academic achievement, with the doctor's hood being longest; the width of the border distinguishes the degree, with the doctor's being widest. The color of the border indicates the field of study; the lining color indicates the institution conferring the degree.

At Northeastern, where only the master's and doctor's hoods are worn, a black chevron on a crimson background is used for the lining.

When colors were first assigned to signify a particular field of study, historical associations were retained as much as possible. For example, white, for arts, refers back to the white fur edging of the Oxford hood; red, for theology, to the traditional color of the church; and green, for medicine, to the color of herbs.

The tassel on the mortarboard may be black or in a color that indicates the graduate's major field of study.



Oh, Alma Mater, here we throng,
And sing your praises strong;
Your children gather far and near
And seek your blessings, dear;
Fair memories we cherish now
And will forevermore.
Come, let us raise our voices strong,
Northeastern, we adore.


NORTHEASTERN
UNIVERSITY
18
98
LVX
VERITAS
VIRTVS