

DOCTOR OF PHILOSOPHY

*Hooding and
Graduation Ceremony*



9 MAY 2022

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.

| | |
|---|----|
| <u>History of Northeastern University</u> | 3 |
| <u>Program</u> | 6 |
| <u>Graduation Speaker</u> | 8 |
| <u>Degrees in Course</u> | 10 |
| <u>Khoury College of Computer Sciences</u> | |
| <u>Khoury College of Computer Sciences and Bouvé College of Health Sciences</u> | |
| <u>College of Engineering</u> | |
| <u>Bouvé College of Health Sciences</u> | |
| <u>College of Science</u> | |
| <u>College of Social Sciences and Humanities</u> | |
| <u>University Senior Leadership</u> | 33 |
| <u>Members of the Board of Trustees, Trustees Emeriti, Honorary Trustees, and Corporators Emeriti</u> | 34 |
| <u>Program Notes</u> | 37 |
| <u>Alma Mater</u> | 38 |

A UNIVERSITY ENGAGED WITH THE WORLD

THE HISTORY OF NORTHEASTERN UNIVERSITY

Northeastern University has used its leadership in experiential learning to create a vibrant new model of academic excellence. But like most great institutions of higher learning, Northeastern had modest origins.

At the end of the nineteenth 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 the 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 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 required more space. In 1922, the College of Business was founded. 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 sister 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. When Ell retired as president in 1959, he was succeeded by Asa S. Knowles, who accelerated the university's growth. Suburban properties in Weston, Nahant, and Burlington were acquired. 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 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 national research university that would be student-centered, practice-oriented, and urban. Under Freeland's leadership, the university made progress toward realizing this vision. Northeastern developed the West Campus with architecturally acclaimed residence halls and research and teaching facilities for the health sciences and computer science; added new spaces to enrich student life on campus; and strengthened the university's experiential learning programs, including cooperative education, research, service learning, and study abroad.

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 has 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 has greatly expanded global co-op opportunities. He has 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 started a system of regional campuses designed to be platforms for lifelong learning linked to area economies. The first two campuses opened in Charlotte, North Carolina, and Seattle. Two more campuses followed in 2015, in Silicon Valley and in Toronto. In 2016, he led the development of a new academic plan, Northeastern 2025. The plan is 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. Since 2016, the university has taken the first steps toward implementation by expanding the role of the regional campuses to serve as platforms for learning, research, and industry partnerships. Furthering that goal, the university in 2019 opened new locations in San Francisco and Vancouver. Northeastern also acquired a college in London, New College of the Humanities, to offer new learning and research opportunities at both institutions.

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. It focuses on graduate studies and research in fields such as AI, digital engineering, and advanced life sciences, amplified by industry partnerships. The institute is designed to be a model of how higher education can jumpstart economic development in regions of the country largely bypassed by the innovation economy.

Resilience and momentum

Less than two months later, COVID-19 brought the world to a sudden, stunning halt. Campuses around the world emptied and moved online for the rest of the spring. But even as students and faculty grew accustomed to classes on Zoom, Northeastern's leaders planned for a safe fall reopening. To restart in-person learning safely, the university built a state-of-the-art COVID-19 surveillance testing facility, including a government-certified lab capable of processing more than 5,000 tests per day. It installed cutting-edge online teaching technology in classrooms that seamlessly integrated in-class and remote learners. It reimagined campus life from student clubs to residence halls to dining. And it kept the research enterprise running at its highest capacity. As a result, the university opened on schedule in September and remained open throughout the school year with no COVID-19 outbreaks. All the while, Northeastern maintained its momentum in learning, research, and innovation.

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 America's most innovative universities.

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.

Jesse Elliot, *trumpet*

Nick Ratliff, *trumpet*

Connor Barnes, *horn*

Adrianna Cepedes, *trombone*

Ben Henderson, *euphonium*

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

DOCTOR OF PHILOSOPHY HOODING AND GRADUATION CEREMONY

MATTHEWS ARENA, TWO O' CLOCK

Opening Remarks

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

Graduation Speaker

Andrew S. Plump, *President, Research & Development, Takeda Pharmaceutical*

Conferring of Degrees

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

Degree in Course

Debra Franko, *Senior Vice Provost for Academic Affairs*

Announcement of the Candidates

Jared Auclair, *Associate Dean of Professional Programs and Graduate Affairs, College of Science*

KHOURY COLLEGE OF COMPUTER SCIENCES

Elizabeth D. Mynatt, *Dean*

Amal Ahmed, *Associate Dean*

COLLEGE OF ENGINEERING

Gregory Abowd, *Dean*

Waleed Meleis, *Associate Dean*

BOUVÉ COLLEGE OF HEALTH SCIENCES

Carmen Sceppa, *Dean*

Jennifer L. Kirwin, *Associate Dean*

COLLEGE OF SCIENCE

Hazel Sive, *Dean*

Jared Auclair, *Associate Dean*

COLLEGE OF SOCIAL SCIENCES AND HUMANITIES

Uta G. Poiger, *Dean*

Thomas J. Vicino, *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

Andrew S. Plump, M.D.

Andrew S. Plump, M.D., the president of research and development at Takeda Pharmaceutical Company and a member of its board of directors, is a true physician-scientist with a deep commitment to pushing the boundaries of science and leveraging breakthroughs to improve patients' lives.

Over the course of a career that spans 30 years in industry and academia, Dr. Plump has made significant scientific contributions in neuroscience, and in the treatment of cardiovascular and metabolic diseases. His experience encompasses the entire drug development life cycle, from initial experiments to patient access. He possesses deep knowledge in biomedical research, experimental medicine, early-stage drug development, genomics, and biomarkers.

At Takeda, Dr. Plump leads a world-class research and development organization focused on four therapeutic areas: oncology, rare diseases, neuroscience, and gastroenterology.

His leadership is marked by a focus on building diverse, cross-functional teams that work seamlessly with internal and external partners and engage in cycles of continuous learning from the patient experience.

Before joining Takeda, Dr. Plump worked at the French pharmaceutical company Sanofi, where he served as senior vice president for research and translational medicine and as deputy to the president of research and development. Prior to his role with Sanofi, Dr. Plump was vice president and worldwide cardiovascular research head at Merck, overseeing cardiovascular research, preclinical development, and translational sciences.

Dr. Plump serves on several committees and external boards, including the Sarnoff Cardiovascular Research Foundation, the Integrative Epidemiology Unit at the University of Bristol in England, the PhRMA Foundation, and the Boston Symphony Orchestra Board of Trustees.

He earned his medical degree from the University of California, San Francisco, completing a residency in internal medicine. Following his clinical experience, Dr. Plump trained as a Howard Hughes and Stanley J. Sarnoff postdoctoral fellow at UCSF, concurrently teaching as an adjunct clinical instructor in the Department of Medical Genetics.

Among his awards and honors, he received the inaugural UCSF Campaign Alumni Innovator Award in 2018. He also was recognized by the cancer

patient support nonprofit Gilda's Club New York City (now known as the Red Door Community) with the Advances in Cancer Research Award. In 2017, Dr. Plump was invited to deliver the prestigious Daniel I.C. Wang Lecture on the Frontiers of Biotechnology at the Massachusetts Institute of Technology.

In addition to his medical degree, Dr. Plump received a PhD in cardiovascular genetics from Rockefeller University and a Bachelor of Science from Massachusetts Institute of Technology.

DOCTOR OF PHILOSOPHY CANDIDATES AND DISSERTATION TITLES

KHOURY COLLEGE OF COMPUTER SCIENCES

In the field of Computer Science

Leif Andersen, BS, MS, University of Utah

Dissertation: A Mechanism for Extending Programming Languages with Domain-specific Interactive and Visual Syntax

Advisor: Matthias Felleisen

Konstantinos Athanasios Athanasiou, Diploma in Electrical and Computer Engineering, National Technical University of Athens

Dissertation: Application and Analysis of Masking Countermeasures in Software

Advisor: Thomas Wahl and Guevara Noubir

Dan Guo, BS, MS, Beijing Institute of Technology

Dissertation: Unsupervised and Semi-Supervised Methods for Analysis of Mass Spectrometry Imaging Experiments

Advisor: Olga Vitek

Liwen Hou, BMath, University of Waterloo; BA, McGill University

Dissertation: Detecting and Modeling Syntactic Change

Advisor: David Smith

Ting Huang, BS, MS, Dalian University of Technology

Dissertation: Statistical Analysis and Design of Mass Spectrometry-Based Proteomic Experiments with Isobaric Labeling

Advisor: Olga Vitek

Chaima Jemmali, BE, National Institute of Applied Sciences and Technology; MS, Worcester Polytechnic Institute; MS, Northeastern University

Dissertation: Debugging Assessment and Personalized Content Generation in a Game that Teaches Programming to Beginners

Advisor: Seth Cooper

Everlyne Nyambura Kimani, BS, Benedict College

Dissertation: Automated Interventions for Public Speaking Anxiety

Advisor: Timothy Bickmore

Kechen Qin, BS, Wuhan University; MS, Brandeis University

Dissertation: Machine Learning for Text Using Latent Information

Advisor: Javed Aslam

Andreas ten Pas, BS, MS, Maastricht University

Dissertation: Grasp Pose Detection in Open Worlds

Advisor: Robert Platt

Bingyu Wang, MS, Northeastern University
Dissertation: Efficiency and Effectiveness in Large-Scale Learning
Advisor: Javed Aslam

In the field of Cybersecurity

Andrea Mambretti, BS, MS, Polytechnic University of Milan; MS, Northeastern University
Dissertation: Execution Security in the Spectre Era
Advisor: Engin Kirda

Dang tien Vo-Huu, BS, Polytechnic of Turin
Dissertation: Software Defined Radio: A Double-Edged Sword for Security and Privacy in Wireless Systems
Advisor: Guevara Noubir

KHOURY COLLEGE OF COMPUTER SCIENCES AND BOUVÉ COLLEGE OF HEALTH SCIENCES

In the field of Personal Health Informatics

Xuan Li, BA, University of California San Diego; MFA, University of Southern California
Dissertation: Optimized Stress Estimation Using a Data Fusion Approach with Integrated Patient-Centric Stress Management Visualizations
Advisor: Holly Jimison

Stefán Ólafsson, BA, BA, MA, University of Iceland
Dissertation: A Hybrid Structured-Neural Dialog System for Automated Counseling
Advisor: Timothy Bickmore

Aditya Ponnada, BDes, Indian Institute of Technology
Dissertation: Measuring Subjective Experiences Using Wearable Microinteractions
Advisor: Stephen Intille

Shuo Zhou, BS, Tsinghua University; MS, Cornell University
Dissertation: Automating Cancer Genetic Counseling with Embodied Conversational Agents: A Computational Framework for Genetic Risk Communication
Advisor: Timothy Bickmore

COLLEGE OF ENGINEERING

In the field of Bioengineering

Lauren Frances Cole, BS, Tufts University

Dissertation: Transcription Factors Regulating Vindoline Biosynthesis in *Catharanthus Roseus*

Advisor: Carolyn Lee-Parsons

Tengfei He, BS, Shanxi University; MS, Northeastern University

Dissertation: Design of Cationic Multi-arm Avidin Nano-construct for Intra-cartilage Delivery of Small Molecule Osteoarthritis Drugs

Advisor: Ambika Bajpayee

Danielle Elizabeth Large, BS, University of Tennessee

Dissertation: Hyper-elastic Liposomes for Enhanced Drug Delivery

Advisor: Debra Auguste

Mehrnaz Mojtabavi, BS, Sharif University of Technology; MS, Stony Brook University

Dissertation: Novel Synthetic and Synthetic/Protein Hybrid Nanopores for Single-Molecule Biosensing Applications and Beyond

Advisor: Meni Wanunu

Harrison Martin Specht, BA, Cornell University

Dissertation: Accessible Single Cell Proteomics by Mass Spectrometry

Advisor: Nikolai Slavov

Michael William Stahl, BS, Boston University; MS, Northeastern University

Dissertation: Structured Light Detection and Delineation of Tripping Hazards for Visually Impaired

Advisor: Michael Epstein

Morris Dwight Vanegas, BS, MS, MS, Massachusetts Institute of Technology

Dissertation: Towards Translation of Portable, Non-invasive, Near-infrared Imaging Systems

Advisor: Qianqian Fang

Armin Vedadghavami, BS, Sharif University of Technology; MS, Northeastern University

Dissertation: Electro-diffusive Transport of Cationic Peptide Carriers in Negatively Charged Joint Environment for Applications in Targeted Drug Delivery

Advisor: Ambika Bajpayee

Max Andrew Winkelman, BS, University of Rochester; ME, Rensselaer Polytechnic Institute

Dissertation: A Microfluidic Device to Study the Influence of Brain Microvascular Networks and Interstitial Flow on Neural Progenitor Cell Self-Renewal and Neurogenesis

Advisor: Dai Guohao

In the field of Chemical Engineering

Pranali Jyotindra Buch, BS, Gujarat University; MSc, Maastricht University; MS, Northeastern University

Dissertation: Development of Next-Generation Liposomes for the Treatment of Bacterial Biofilm Infections

Advisor: Edgar Goluch

Li Jiao, BS, Anhui Agricultural University; MS, Nanjing Forestry University

Dissertation: Fundamental Understanding and Rational Electrocatalyst Design for Oxygen Reduction in Acid Medium and Hydrogen Evolution and Oxidation in Alkaline Medium

Advisor: Sanjeev Mukerjee

Ninad Shrikant Kanetkar, BE, Birla Institute of Technology and Science, Pilanii; ME, Cornell University

Dissertation: Functionalization of Thermoresponsive Hydrogels for Topical Delivery of Cellular and Pharmaceutical Payloads to the Intestine

Advisor: Adam Ekenseair

Vyshnavi S. Karra, BS, MS, Rutgers University

Dissertation: Modeling Rosette Nanotubes and Hypo-Elastic Lipid Nanocarriers Using Molecular Dynamics for Drug Delivery Applications

Advisor: Francisco Hung

Qingxuan Li, BS, MS, Beijing Institute of Technology

Dissertation: Single Identical Cell Cytotoxicity Assay on Lithographically Generated Microstructures

Advisor: Ming Su

Ada Vernet Crua, BS, MS, University of Rovira i Virgili

Dissertation: Tellurium-Based Nanomaterials for Advanced Biomedical Applications

Advisor: Rebecca Willits

Tugba Yilmaz, BS, MS, Istanbul Technical University

Dissertation: DNA-Based Electrochemical Biosensor Development for Pathogen Detection

Advisor: Edgar Goluch

In the field of Civil and Environmental Engineering

Sadia Tamanna Khan, BS, Bangladesh University of Engineering and Technology

Dissertation: Characterizing and Modeling of Urban Stormwater Nutrient Export

Advisor: Edward Beighley

Solize Vosloo, BS, MS, University of Pretoria

Dissertation: Genome Centric and Flow Cytometric Characterization of the Boston Drinking Water Microbiome

Advisor: Ameet Pinto

In the field of Civil Engineering

Kaixin Huang, BS, Tianjin University; MS, Carnegie Mellon University

Dissertation: Using Large-Scale Energy Model to Project Future Physical Economy, Emissions, and Potential Health Benefit Changes

Advisor: Matthew Eckelman

Tao Jiang, BE, ME, Dalian University of Technology

Dissertation: Applying a Quantitative Toxicogenomic Approach for Mechanistic and Comparative Toxicity Assessment of Carbon-based Nanomaterials

Advisors: April Gu and Annalisa Onnis-Hayden

Shaoning Li*, BS, China Agricultural University; MS, Northeastern University

Dissertation: Stochastic Analysis for Wind Turbine Blades Subjected to Aeroelastic Instabilities

Advisor: Luca Caracaglia

Tianyou Liu, MS, The University of Tokyo

Dissertation: Data-Driven Analytics to Mitigate Metro System Crowding and Disruption Impacts

Advisor: Haris Koutsopoulos

Lele Luan, MS, Hunan University

Dissertation: Deep Vision for Sensing and Discovery of Nonlinear Dynamics

Advisors: Qi Wang, Hao Sun, and Ming Wang

Mohammad Bagher Saeidi Razavi, BS, MS, Sharif University of Technology

Dissertation: Designing Traffic Signals to Better Serve Pedestrians, Bicyclists, and Transit

Advisor: Peter Furth

Andrew Paul Summerfield, BS, Tufts University; MS, Northeastern University

Dissertation: Assessment of the Accuracy of Engineering Methods for Predicting Dynamic and Quasi-static Wave Loads on Monopile-supported Offshore Wind Turbines

Advisor: Andrew Myers

Yue Wang, BS, Tsinghua University; MS, Northeastern University

Dissertation: Leverage of SCOOT Loop Sensor Data

Advisor: Haris Koutsopoulos

*LEADERS Fellow, awarded the Experiential PhD Leadership Graduate Certificate

Seyedmostafa Zahedi, BS, Shiraz University; MS, Sharif University of Technology
Dissertation: Intersection of Mobility-on-Demand and Public Transportation
Advisor: Haris Koutsopoulos

Yuwei Zhao, BE, Wuhan University
Dissertation: In-situ Electrogeneration of H₂O₂ for the Fenton Reaction
Advisor: Akram Alshawabkeh

Jiali Zhou, BE, South China University of Technology; MS, Carnegie Mellon University
Dissertation: Urban Rail Simulation and Applications in Service Planning and Operations
Advisor: Haris Koutsopoulos

In the field of Computer Engineering

Sadjad Asghari Esfeden, BS, University of Tehran; MS, Northeastern University
Dissertation: SpatioTemporal Prediction of Object Handover for Human-Robot Collaboration, a Computer Vision Approach
Advisor: Deniz Erdogmus

Sara H A A Banian, MS, Kuwait University
Dissertation: Content-Aware Design Assistance Frameworks for Graphic Layout Design
Advisor: Casper Hartevelde

Lorenzo Bertizzolo, BS, MS, Polytechnic University of Turin
Dissertation: Software-Defined Wireless Networking for 5G-and-Beyond: From Indoor Cells to Non-Terrestrial UAV Networks
Advisor: Tommaso Melodia

Linbin Chen, BS, Beijing Institute of Technology
Dissertation: Low Power Designs Using Approximate Computing and Emerging Memory at Nanoscales
Advisor: Fabrizio Lombardi

Songyao Jiang, BS, Hong Kong Polytechnic University; MS, University of Michigan
Dissertation: Vision-based Analysis of Human Face and Gesture: Dynamic Modeling, Synthesis, and Recognition
Advisor: Yun Raymond Fu

Hongjia Li, BE, Jilin University; MS, Syracuse University
Dissertation: Automation Design and DNN Acceleration Frameworks: From Software Implementation to Hardware Physical Design
Advisor: Yanzhi Wang

Shan Lu, BS, Peking University; MS, Institute of Computing Technology, Chinese Academy of Sciences
Dissertation: A Method for Identifying Relevant Information Sufficient to Answer Situation Dependent Queries
Advisor: Mieczyslaw Kokar

Apoorve Mohan, BS, MS, University of Delhi

Dissertation: Provisioning Strategies for Centralized Bare-Metal Clusters

Advisor: Gene Cooperman

Subhramoy Mohanti, BTech, West Bengal University of Technology; MS, Northeastern University

Dissertation: Distributed Beamforming and Networking with Unmanned Autonomous Vehicles: A Systems Perspective

Advisor: Kaushik Chowdhury

Murphy Elizabeth Wonsick, BS, Florida Institute of Technology; MS, Worcester Polytechnic Institute

Dissertation: Supervisory Control for Humanoid Robots Through Virtual Reality Interfaces

Advisor: Taskin Padir

Jinghan Zhang, BS, Shanghai Jiao Tong University; MS, Northeastern University

Dissertation: Domain Design Space Exploration: Designing a Unified Platform for a Domain of Streaming Applications

Advisor: Gunar Schirner

In the field of Electrical Engineering

Mohammadreza Alimadadi, BS, Shahid Beheshti University; MS, Amirkabir University

Dissertation: Object Tracking in Random Access Sensor Networks

Advisor: Milica Stojanovic

Bahare Azari, BS, Tehran Polytechnic; MS, Politecnico di Milano

Dissertation: Equivariant Deep Generative Models

Advisor: Deniz Erdogmus

Keng Chen, BS, Fudan University; MS, Rensselaer Polytechnic Institute; MS, Columbia University

Dissertation: Design of Accurate and Responsive Power Management Integrated Circuits for Microprocessor Systems

Advisor: Marvin Onabajo

Tianyu Dai, BS, Harbin Institute of Technology

Dissertation: Data-Driven Control and Estimation

Advisor: Mario Sznajder

Andac Demir, BS, Tufts University

Dissertation: Automated Bayesian Network Exploration for Nuisance-Robust Inference

Advisor: Deniz Erdogmus

Cesar Antonio Galvez Nuñez, BS, Callao University; MS, Northeastern University
Dissertation: Fault Location in Radial and Meshed Networks Containing Distributed Energy Resources (DERs)
Advisor: Ali Abur

Ya Guo, BS, Xi'an University of Technology; MS, Auburn University
Dissertation: Power Optimization and Management of PV Grid-Connected Microgrid in Energy Market
Advisor: Bradley Lehman

Sungho Kang, BS, University of Illinois at Urbana-Champaign; MS, Northeastern University
Dissertation: Plasmonically Enhanced Infrared Sensing Microsystems
Advisor: Matteo Rinaldi

Jonathan Chan Ki Kim, BS, Boston University
Dissertation: DC ARC Fault Detection and Protection in Solar Photovoltaic Power Systems
Advisor: Bradley Lehman

Andre Luiz Langner, BS, MS, Federal University of Paraná
Dissertation: Multi-Area Distribution System State Estimation Using a Virtual Reference
Advisor: Ali Abur

Kai Li, BS, MS, Qingdao University
Dissertation: Reconfigurable and Intelligent Wireless Charging Surfaces
Advisor: Kaushik Chowdhury

Wenqian Liu, MS, Columbia University
Dissertation: Explainable Efficient Models for Computer Vision Applications
Advisor: Camps Octavia

Nikita Mirchandani, MS, Northeastern University
Dissertation: Ultra-Low Power and Robust Analog Computing Circuits and System Design Framework for Machine Learning Applications
Advisor: Aatmesh Shrivastava

Mehdi Nasrollahpourmotlaghzanjani, BS, Shahid Rajaei University; MS, San José State University
Dissertation: RFICs for Biomedical Magnetic and Magnetoelectric Microsystems
Advisor: Nian X. Sun

Flavius Vasile Pop, BS, MS, University of Udine
Dissertation: Intrabody Communication for Real-Time Monitoring of Implanted Medical Devices based on Piezoelectric Micromachined Ultrasonic Transducers
Advisor: Matteo Rinaldi

Vageeswar Rajaram, BTech, Amrita Schools of Engineering; MS, Northeastern University

Dissertation: Near-Zero Power Microelectromechanical Sensors for Large-Scale IoT Sensor Networks

Advisor: Matteo Rinaldi

Mahdiar Sadeghi, MS, Northeastern University

Dissertation: Control and Decision Making in Systems Biology

Advisor: Eduardo Sontag

Arjun Singh, BS, MS, State University of New York at Buffalo

Dissertation: Design, Modeling, and Operation of Plasmonic Devices for Smart Communication Systems in the Terahertz Band

Advisor: Josep M Jornet

Chengju Yu, BS, Huazhong University of Science and Technology; MS, Northeastern University

Dissertation: Development of Interface-Engineered Thin Films and Magnetodielectric Bulk Composites for MMIC Applications

Advisor: Vincent Harris

Weite Zhang, BS, Zhejiang University of Technology; MS, Zhejiang University

Dissertation: High Sensing-Capacity Multi-dimensional-coded Millimeter-wave MIMO Imaging System

Advisor: Jose Martinez Lorenzo

In the field of Industrial Engineering

Razan Ali Hassan Al Lawati, BS, MS, Purdue University; MS, Northeastern University

Dissertation: Decision Making Under Uncertainty for Variable Resource Generators Participating in Sequential Energy Markets

Advisor: Md Noor E Alam

Basma Bargal, BS, Kuwait University; MSc, American University in Cairo

Dissertation: Workforce Burnout from a Systems Science Perspective

Advisor: James Benneyan

Xiaoli Duan, BS, University of Minnesota Twin Cities

Dissertation: Statistical Methods for Detecting Changes in Epidemic, Adverse Event, and Infection Rates

Advisor: James Benneyan

Md Mahmudul Hasan, BS, MS, Bangladesh University of Engineering and Technology

Dissertation: Leveraging Analytics to Inform Policies and Develop Decision Frameworks for Addressing Opioid Overdose Epidemic

Advisor: Md Noor E Alam

Anqi He, BS, MS, Xi'an Jiaotong University

Dissertation: Deep Learning-based Fault Prognostics for Industrial Systems

Advisor: Xiaoning Jin

Dinghao Ma, BS, Shanghai University; BS, University of Technology Sydney

Dissertation: A Geometric Optimization Approach to the Location and Routing Problem in Modern Economy

Advisor: Mehdi Behroozi

Md Sarowar Morshed, BS, Bangladesh University of Engineering and Technology; MA, University of Central Florida

Dissertation: Randomized Sketching Methods for Linear Optimization: Greedy Sampling and Momentum

Advisors: Md Noor E Alam, Ozlem Ergun, and Jacqueline Griffin

Fatemeh Pouomran, BS, MBA, Sharif University of Technology

Dissertation: Machine Learning for Automated Pain Assessment Using Physiological Signals

Advisor: Sagar Kamarthi

Matthew Brian Williams, BS, United States Coast Guard Academy; MS, The College of William and Mary

Dissertation: Considering Fairness, Equity and Resilience in the Capacitated House Allocation Problem with Ties, Conflicts, and Priorities

Advisor: Ozlem Ergun

Chenxi Yuan, BS, Northeastern University (China); MS, University of Florida

Dissertation: Deep Neural Network Architectures for User-Centered Design Concept Generation and Evaluation

Advisors: Mohsen Moghaddam and Sagar Kamarthi

In the field of Interdisciplinary Engineering

Armin Akhavan, MS, Northeastern University

Dissertation: Data Processing Tools for Accessibility Analysis

Advisor: Peter Furth

Yichen Deng, BS, Tongji University

Dissertation: A Computational Approach to Fundamentally Understand Blending Thermodynamics Between Polymers and Single-Wall Carbon Nanotubes

Advisor: Marilyn Minus

Christian L. Grenier, BS, Northeastern University

Dissertation: An Adaptive Electrochemical System for Disease Detection, Tracking, and Diagnosis

Advisor: Ming Wang

Clara Romero Santiveri, BS, MS, University of Rovira i Virgili

Dissertation: High Throughput Cultivation and Isolation of Unculturable Bacteria Using Microfluidic Devices

Advisor: Edgar Goluch

Fangzheng Sun, BS, University of Washington; MS Worcester Polytechnic Institute

Dissertation: Data Driven Symbolic Discovery of Nonlinear Dynamics

Advisor: Qi Wang and Hao Sun

Mary Elizabeth Warner*, BA, Knox College; MS, Rochester Institute of Technology

Dissertation: Climate Extremes, Natural Hazards, and Resilience of Infrastructures and Communities

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Wenjin Zhang, MS, Northeastern University

Dissertation: Leveraging Machine Learning to Enable Real-Time Phosphorus Quantification and Process Control in Wastewater Treatment Facilities Using Semi-Specific Multi-Sensor Arrays

Advisor: Amy Mueller

In the field of Mechanical Engineering

Jason Bice, BS, University of Florida; MS, Purdue University

Dissertation: Advanced Manufacturing of Boron Nitride Ceramic Matrix Composites: The Discovery of Thermoforming All-Ceramic CMCs and a Link Between Structure-Property-Performance for Thermal Management Solutions

Advisor: Randall Erb

Huang Huang, BE, Central South University

Dissertation: Mechanisms of Densification and Bonding in Ultrasonic Consolidation of Aluminum Powder

Advisor: Teiichi Ando

Mohammad Javad Khodaei, BS, Iran University of Science and Technology; MS, Sharif University of Technology

Dissertation: Acoustic Wave Manipulation with Artificial Metasurfaces

Advisor: Nader Jalili

Amin Mehrvarz, BS, MS, Sharif University of Technology

Dissertation: Theoretical and Experimental Analyses of Tunable Active Metamaterials Via Use of Feed-forward/back Controllers

Advisor: Nader Jalili

Kamran Poorbahrami, BS, Sharif University of Technology; MS, Northeastern University

Dissertation: Combining Medical Imaging Techniques with Computational Models to Investigate Airflow and Particle Distribution in Asthmatic Lungs

Advisors: Michael Allshouse and Jessica Oakes

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Dissertation: Fundamental Mechanics of Colloids, Bacteria, Membranous Vesicles in the Presence of Intersurface Interaction

Advisors: Kai-tak Wan and Sinan Müftü

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Dissertation: Elucidating Replication Fork Dynamics Involving the Alpha Subunit of DNA Polymerase III and Single Stranded DNA Binding Protein in E. Coli
Advisor: Penny Beuning

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Dissertation: Elucidating the Biological Role and Mechanisms of Ras/Raf Complex Formation
Advisor: Carla Mattos

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Dissertation: Expanding the Analytical Toolbox for Synthesis and Characterization of Ribonucleic Acids
Advisor: Penny Beuning

In the field of Ecology, Evolution, and Marine Biology

Theresa Marie Davenport*, BS, Gettysburg College; MS, College of William and Mary
Dissertation: Reef and Landscape Characteristics Influence Nekton Recruitment Enhancement by Restored Oyster Reefs
Advisors: Jonathan Grabowski and A. Randall Hughes

Alan Matthew Downey-Wall, BS, Eckerd College; MS, Texas A&M University
Dissertation: DNA Methylation as an Intra- and Transgenerational Mediator of Phenotypic Response: Insights from Theory and Experimental Exposures in Crassostrea Virginica Under Ocean Acidification
Advisor: Katie Lotterhos

Sara Michele Schaal, BS, University of Wisconsin-Milwaukee
Dissertation: Understanding How and Why Intraspecific Diversity Arises: An Interdisciplinary Approach Combining Empirical Field Studies, Theoretical Simulations, and Historical Reconstructions
Advisor: Katie Lotterhos

Joseph Henry Vineis, BA, University of Vermont; MS, State University of New York
Dissertation: Nutrient Influence on Microbial Structure and Function Within Salt Marsh Sediments
Advisor: Jennifer Bowen

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Kelsi L. Furman, BS, Northeastern University

Dissertation: Integrating Ecological Variation and Social Equity for Coastal and Fisheries Management

Advisor: Steven Scyphers

Elise Meaghan McNally, BA, Colby College

Dissertation: Understanding the Influence of Reef Environment, Parental History, and Parasite-Host Interactions on the Vulnerability of Eastern Oysters (*Crassostrea virginica*) to Oceanic Change

Advisor: Justin Ries

Kiera Lynn O'Donnell, BS, University of New England

Dissertation: Assessing the Landscape and Social Context of Natural and Nature-Based Features (NNBF) in Hurricane Impacts and Recovery

Advisor: Steven Scyphers

Kevin Alexander Ryan, BS, Winthrop University

Dissertation: Fluxes and Quality of Dissolved Organic Matter Within Forested and Human-Impacted Watersheds

Advisor: Aron Stubbins

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Jorio Coca, BE, ME, Polytechnic University of Milan; MA, Rice University

Dissertation: Nonconvex Optimization with Applications to Machine Learning and Signal Recovery

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Dissertation: Applications of Neural Tangent Theory in Deep Learning

Advisor: Aidong Ding

Oleksii Serhiiovych Sorokin, BS, MA, Ivan Franko National University of Lviv

Dissertation: Derived Profunctors

Advisor: Alexander Martsinkovsky

Cancan Zhang, BS, BS The Ohio State University; MA, Boston University

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Advisor: Gordana Todorov

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Jessica Tayler Davis, BS, University of North Carolina at Chapel Hill

Dissertation: From Rumors to Pandemics: Leveraging Networked Structured Populations to Model the Dynamics of Contagion Processes

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Ryan J. Gallagher, BS, University of Connecticut; MS, University of Vermont

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Yanchen Liu*, BS, Peking University

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Advisor: Albert-László Barabási

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Bingran Wang, BS, University of Utah

Dissertation: Search for ZZ Vector Boson Scattering in pp Collisions at 13 TeV

Advisor: Darien Wood

Andrew Lloyd Wisecarver, BS, Birmingham-Southern College; MS, Northeastern University

Dissertation: Measurement of the Strong Coupling Constant Using Differential Cross Sections of the W Boson Produced in Association with Jets with the CMS Detector at the LHC

Advisor: Emanuela Barberis

Xinyue Xiong, BS, Zhejiang University

Dissertation: Forecasting the Epidemics with Reaction Diffusion Processes Upon Networks

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Dissertation: One-Dimensional Spin and Fermionic Systems with Long-Range Antiferromagnetism

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Dissertation: Amodal Phonology: Some Linguistic Principles Transcend Modality

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Dissertation: The Differential Influence of Physical Fitness and Physical Activity on Cognitive Control: A Test of Potential Biological Markers of Underlying Neural Mechanisms

Advisor: Hillman Charles

Yingzhao Zhou, BA, Henan Normal University; MA, University of Delaware; MS, Northeastern University

Dissertation: The Inverse Frequency Effect in Syntactic Priming

Advisor: Neal Pearlmutter

COLLEGE OF SOCIAL SCIENCES AND HUMANITIES

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Advisor: Kevin Drakulich

William Arthur Sharpe, BS, MS, Salem State College

Dissertation: Assessing Deterrence in the FBI's Safe Streets Gang Initiative: A Social Network Approach

Advisor: Jack Greene

Stacie Nicole St. Louis, BA, University of Massachusetts Amherst

Dissertation: The Cumulative Disadvantages of Pretrial Detention: The Average Effect, the Effect by Detention Type, and the Effect Over Time

Advisor: Natasha Frost

In the field of Economics

Yang Han, MA, New York University

Dissertation: Essays on Term Structure of Interest Rates and Monetary Policy

Advisor: Jun Ma

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Dissertation: Public and Private Investment in Renewables and Broadband: An Industrial Organization Perspective

Advisors: James Dana and Imke Reimers

Urbashee U. Paul, BA, Boston University, MS, George Washington University

Dissertation: Essays on Skilled-Labor Immigration and Economic Mobility

Advisor: Alicia Sasser Modestino

Yunus Cem Yilmaz, BA, Koç University

Dissertation: Microeconomic Analyses of the Effects of Regulation and Elections Across Europe and Turkey

Advisor: James Dana

In the field of English

Jacob Benjamin Murel, BA, MA, University of Memphis

Dissertation: (In)stability and (Re)creation in the English Print Reception of Vesalian Anatomical Illustrations: A Material-Hermeneutical and Text Analytic Study in Transnational Early Modern Bibliography

Advisor: Erika Boeckeler

Gregory Palermo, BA, State University of New York College at Geneseo; MA, Northeastern University
Dissertation: Re-Landscaping Digital Scholarship: A Computational Analysis of Citations in Digital Humanities and Writing Studies
Advisor: Neal Lerner

In the field of History

Debra Ann Lavelle, BA, BA, University of Massachusetts Dartmouth; MA, George Washington University
Dissertation: A Desirable Calamity: Liminal Space in the Visual Culture and Public History of the Salem Witch Trials
Advisor: Angel Nieves

Daniel Squizzero, BA, University of Massachusetts Amherst; MA, Northeastern University
Dissertation: The Great War for Emancipation: Italian Women's Transnational Activism, 1903 – 1923
Advisor: Timothy Brown

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Shiqin Liu, BA, Cleveland State University; MS, University of Iowa
Dissertation: Entrepreneurship, Innovation, and Regional Economic Development: Spatial Variations and Empirical Analyses of Firm Formation, Small Business Innovation and Income Inequality
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In the field of Political Science

Zachary Paul Buchanan Agatstein, BA, St. Mary's College of Maryland
Dissertation: Perpetrator, Facilitator, Resister: A Framework for Studying State Roles in Genocide
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Dissertation: Communities in Crisis: How Cities Adapt to Climate Change in the US and Japan
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Advisors: Daniel Faber, Liza Weinstein, and Valentine Moghadam

Rachael Shaw, BA, Eastern Connecticut State University; MA, East Carolina University

Dissertation: Chronic Disease Inequities in the Era of Self-management: Community Health Center Provider and Patients' Interpretations of Health Inequity

Advisor: Laura Senier

Lourdes Annette Vera, BA, Barnard College at Columbia University; MA, City University of New York at Brooklyn College; MA, Northeastern University

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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.

The College Flags used in the commencement ceremonies will be presented to the commencement audience by the class marshal, the highest-ranking student in the college.

ALMA MATER

Oh, Al - ma Ma - ter, here we throng, And
sing your prais - es strong; Your child - ren ga - ther far and near And
seek your bless - ings, dear; Fair mem - o - ries we cher - ish now And
will for - ev - er - more. Come, let us raise our voi - ces strong, North -
east - ern we a - dore.

The image shows a musical score for the hymn 'Alma Mater'. It consists of five staves of music in a single system. The key signature is three flats (B-flat, E-flat, A-flat) and the time signature is common time (C). The melody is written on a treble clef staff. The lyrics are printed below the notes, with hyphens indicating syllables that span across multiple notes. The music concludes with a double bar line and repeat dots.

*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.*

NOTES

