

EDUCATION

UMass Chan School of Medicine, Worcester, MA 2023 – 2026
Emergency Medicine Residency
Chief Resident 2025 – 2026

Tufts University School of Medicine, Boston, MA 2019 – 2023
Doctor of Medicine May 2023
Master of Public Health May 2023

Khoury College of Computer Sciences at Northeastern University, Boston, MA 2013 – 2019
Master of Science in Computer Science April 2019
GPA: 4.00/4.00
Specializations: Artificial Intelligence and Data Science
Project: Detection and Stimulation of Movement During Sleep with Tactile Feedback (Apple Watch),
Preceptor: Stephen S Intille
Bachelor of Science in Computer Science and Biology May 2017
GPA: 3.82/4.00
Comp. Sci. GPA: 3.94/4.00

WORK EXPERIENCE

Massachusetts Institute of Technology Lincoln Laboratory, Lexington, MA
Assistant Technical Staff- Cyber Analytics and Decision Systems 2017 – 2019

- Developed components within a cybersecurity architecture for federal departments and agencies and performed supporting research, including systems analysis, data science, and design and execution of a longitudinal study to evaluate behavioral effects on security.

Apple Inc., Pittsburgh, PA
Productivity Applications Software Engineering Co-Op July – December 2016

- Worked with a geographically distributed team to add tables to Apple Notes as part of iOS 11 and macOS High Sierra.
- Built the data model behind the tables feature, handling serialization and logic for deterministic merging across replicas for cloud sync and collaboration, as well as UI components.

TAVANA LLC, Boston, MA
Software Developer 2015 – 2016

- Developed a novel cyclist-driver communication application for iOS, using a combination of bluetooth, GPS, and web technologies.
- Designed prototype board and firmware for SoC built around ARM Cortex CPU as part of cyclist-driver communication hardware.

RESEARCH EXPERIENCE

Beth Israel Deaconess Medical Center, Boston, MA
MD/MPH Program Applied Learning Experience Spring 2023
Project Title: ECG image analysis for acute coronary syndrome risk stratification in the emergency department
Preceptor: Adrian D. Haimovich MD, PhD

- Designed an iOS application for scanning, preprocessing, and extracting patient identifiers and text from ECGs.
- Developed multiple prototype ECG classifiers based on EfficientNetB3 to classify ECGs in real time within the iOS application for local on-device interpretation of photographed ECGs.

Project Fall 2022 – Spring 2023
Preceptor: Larry A. Nathanson, MD

- Collaborated with researchers at outside institution to leverage triage and greet note information to predict future boarding surges to allow for flex staffing prioritization.

- Developed new natural language features to improve model performance and worked to develop simulation model for evaluating model retrospectively on previous years of emergency department operations.

Brigham and Women's Hospital, Boston, MA

Research Collaborator 2017 – 2023

- Design and maintain cognitive testing software for field studies of shift work countermeasures. Assist with study design and execution.

Sleep Laboratory Research Technician 2015 – 2016

- Monitored and interacted with inpatient subjects, including taking vital signs, collecting and processing biological specimens, and applying PSG electrodes (EEG, EOG, EMG, EKG).
- Executed protocols for multiple studies simultaneously and acted as study staff for numerous study interventions.
- Developed and presented a millisecond accurate psychomotor vigilance task for iOS devices along with mobile cognitive test management software, SQLite database, and automated scoring software for data from validation apparatus.

Beth Israel Deaconess Medical Center, Boston, MA

MD/MPH Program Field Experience Summer 2020

Preceptor: Larry A. Nathanson, MD

- Performed feature engineering and model development to predict case severity based on available triage data, such as blood pressure, emergency severity index (ESI), and presenting problem. Identified features were used to train models to predict intubation events and central line placement later in emergency department course.
- Presented "Triage Feature Engineering and Analytics at a Tertiary Care Emergency Department" at the Tufts MD/MPH summer field experience poster session.

VOLUNTEER EXPERIENCE

American Red Cross of Massachusetts, Cambridge, MA

Volunteer Instructor and Instructor Trainer 2013 – 2021

- Taught courses in CPR/AED, first aid, lifeguarding, swimming, water safety, and caregiving skills to nurses and other healthcare providers, as well as lay responders.
- Certified more than 1,000 people in American Red Cross courses. Mentored and trained new instructors as an instructor trainer.

EXTRACURRICULAR ACTIVITIES

Tufts University School of Medicine, Boston, MA

Artificial Intelligence in Medicine – Co-President 2020-2021 2019 – 2021

Artificial Intelligence in Medicine is a club at Tufts University School of Medicine with a goal of expanding Artificial Intelligence/Machine Learning literacy among the TUSM community and engaging with the various applications of data science in medicine. This has included planning and developing workshops based on areas of interest, hosting guest speakers, as well as online communication.

Sharewood Project – Sexual and Reproductive Health Counselor 2020-2021 2019 – 2021

The Sharewood Project is a free health education program that provides limited health care services. Sexual and reproductive health counselors are responsible for providing sexual and reproductive health counseling services, including STI screening for community members attending the weekly clinic. Additional responsibilities include development of training materials for future counselors.

AWARDS & HONORS

Outstanding MD/MPH & DVM/MPH Applied Learning Experience Award May 2023

An annual award given to recognize an outstanding Applied Learning Experience as part of the Tufts MD/MPH program. Awarded for the project titled "ECG image analysis for acute coronary syndrome risk stratification in the emergency department."

Volunteer of the Year by American Red Cross of Massachusetts July 2018

An award given to 20 Red Cross volunteers from across Massachusetts who were nominated by their peers within each division of the American Red Cross; awarded for Preparedness, Health & Safety Services.

Huntington 100 by Northeastern University April 2017

Sponsored by the Office of Student Life, the Huntington 100 honors outstanding students for achievements which are commensurate with the university's mission, ideals, values, and Academic Plan. In 2013, the 100 Most Influential Seniors program was rebranded as the Huntington 100, honoring distinguished juniors and seniors.

POSTERS & PUBLICATIONS

1. Shin E, Desnoyers B, Bernazzani M, Carreiro S. Application of Artificial Intelligence to Emergency Medicine in the United States: A Scoping Review. ACEP 2025 Abstract and Oral Presentation.
2. Barger, L. K., Zhang, Y., Lammers-van der Holst, H. M., Snoep, D., Murphy, A. S., Desnoyers, B., & Duffy, J. F. (2024). Feasibility, effectiveness, and acceptability of an afternoon-evening sleep schedule in older nightshift workers. *Sleep Advances*, 5(1), zpae010.
3. Makutonin M, Desnoyers B, Nathanson LA, Meltzer AC. A Machine Learning Approach to Predicting Boarding and Admission Surges using Triage Information. ACEP 2023 Abstract.
4. Lammers- van der Holst HM, Zhang Y, Barger LK, Wise JC, Murphy AS, Desnoyers BM, Qadri S, Ronda JM, Duffy JF. 299 Limited Time for Sleep in Night Shift Workers is associated with Risk of Insomnia and Shift Work Disorder. *Sleep*, Volume 44, Issue Supplement_2, May 2021, Pages A119-A120, <https://doi-org.eres.qnl.qa/10.1093/sleep/zsab072.298>.
5. Lammers- van der Holst HM, Zhang Y, Barger LK, Wise JC, Murphy AS, Desnoyers BM, Qadri S, Ronda JM, Duffy JF. Long shift duration is associated with high risk for Shift Work Disorder. *J Sleep Res* 2020; 29(S1):262.
6. Lammers-van der Holst HM, Zhang Y, Barger LK, Wise JC, Murphy AS, Desnoyers BM, Qadri S, Ronda JM, Duffy JF. Sex differences in sleep and quality of life in healthcare shift workers. *Sleep*. 2020; 43:A146-147.
7. Desnoyers BM, Weistroffer K, Hallapy J, Pisharody S. Interoperability and Information-Sharing Paradigm for IoT-Enabled Healthcare. In: *Cloud Network Management*. Chapman and Hall/CRC; 2020:151-174.
8. Lammers- van der Holst HM, Barger LK, Zhang Y, Murphy AS, Wise J, Desnoyers BM, Quadri S, Ronda JM, Duffy JF. Test of a sleep timing strategy to improve night shift performance in older healthcare workers. Abstracts, Discover Brigham 2019, Brigham and Women's Hospital, Boston MA, Nov 7, 2019.
9. Duffy JF, Lammers- van der Holst HM, Zhang Y, Barger LK, Ronda JM, Murphy AS, Wise J, Desnoyers BM. Test of a sleep timing strategy to improve night shift performance in older healthcare workers. Abstracts, 2019 Quality and Research Fair, Lowell General Hospital, Lowell MA, Oct 29, 2019.
10. Farjadian A, Al-Otaibi S, Kong Q, Farjadian E, Molaei A, Desnoyers BM, Winkeler Z, Magee LJ, Downie CE, Freeley CM. Bike Beacon: A Novel Cyclist and Pedestrian Collision Avoidance Technology. RISE: Research, Innovation, and Scholarship Expo. RISE:2015, Northeastern University, Boston MA, Apr 9, 2015.

Reviewer

1. 28th USENIX Security Symposium; August 2019