KATHLEEN LEWIS

@ kmlewis@mit.edu Boston, MA https://katiemlewis.github.io/ @KatieLewisMIT www.linkedin.com/in/katiemarielewis

RESEARCH EXPERIENCE

Research Assistant

Computer Science and Artificial Intelligence Laboratory (CSAIL)

September 2017 – Present MIT EECS

- Developed learning-based method to align sparse, clinical MRI brain scans
  - Better than the fastest baseline on 92% of subjects
  - 100x faster on the CPU than the most accurate baseline
- Collaborating with artist for public art display at MIT
  - Machine learning for signature generation
- Audio to Vision Multimodal Scene Understanding

Research Assistant

College of Engineering Senior Design Project

August 2016 - May 2017 Boston University

- Designed and developed automated door-opening robotic system for wheelchair users
- Implemented computer vision system to automatically detect door handle type and location

Research Assistant

Computer Architecture and Automated Design Lab

January 2016 - May 2017 Boston University

- Improved runtime of existing Molecular Dynamics code by:
  - Multithreading and implementing existing code on the GPU
  - Designing algorithms to improve locality and cache hit rates

Software Engineer Intern

MITRE Corporation

May 2015 - August 2015 Boston, MA

- Developed web app for Air Force to view and edit map routes from database

Research Assistant

Cross-Disciplinary Integration of Design Automation Research

August 2014 - Dec. 2015 Boston University

- Developed web app for Synthetic Biology project design

Research Assistant

International Genetically Engineered Machine Competition

May 2014 - November 2015 Boston University

- Received gold medal at worldwide conference
- Implemented computational-experimental workflow to improve efficiency of complex genetic circuits

EDUCATION

Massachusetts Institute of Technology

Doctor of Philosophy in Computer Science

Expected: June 2022

Massachusetts Institute of Technology

Master of Science in Computer Science

June 2019

Boston University

Bachelor of Science in Computer Engineering

September 2013 - May 2017

HONORS & AWARDS

- Frederic and Barbara Cronin Fellowship
- Women in ML (WiML) Travel Scholarship
- Machine Learning for Healthcare (ML4H) Travel Scholarship
- Boston University Trustee Scholarship (Four years full tuition)
- Joseph Healey Distinguished Fellowship
- Clare Booth Luce (Research Award)
- Honor Societies: Tau Beta Pi, IEEE-HKN

PUBLICATIONS

Machine Learning for Art

- A. Zhao, G. Balakrishnan, **KM Lewis**, F. Durand, J. Guttag, A.V. Dalca. Painting Many Pasts: Synthesizing Time Lapse Videos of Paintings. 2020 [Under Review]

Machine Learning for Medical Imaging

- Fast Learning-based Registration of Sparse Clinical Images (arXiv:1812.06932)
- Spotlight Presentation (**6% acceptance rate**) and Poster at Machine Learning for Healthcare (ML4H) @ NeurIPS 2018
- Poster presented at Women in Machine Learning (WiML) @ NeurIPS 2018
- Poster presented at Women in Computer Vision (WiCV) @ CVPR 2019

GPU-Accelerated Charge Mapping

- Ahmed Sanaullah, **Kathleen Lewis**, Martin Herbordt, GPU-Accelerated Charge Mapping. IEEE High Performance Extreme Computing Conference, HPEC 2016.
- Poster presented at Performance-Aware Programming with Application Accelerators, University of Hong Kong

Synthetic Biology Web App (Phagebook)

- Poster presented at Synberc, MIT
- Poster presented at International Workshop on Bio-Design Automation, University of Washington

LEADERSHIP

- Machine Learning across MIT Committee (MIT, 2019)
- EECS REFS Internal Conflict Management Counselor (MIT, 2019)
- Student Governor, IEEE-HKN Board of Governors (Nationwide position, Jan - Dec 2018)
- Teaching Assistant, 6.00 Intro: Comp Sci & Programming (MIT, Fall 2018)
- President, IEEE Student Chapter/IEEE-HKN (Boston University, April 2016 - May 2017)
- Teaching Assistant, Performance-Aware Programming with Application Accelerators (University of Hong Kong, July 2016)
- Tour Guide, College of Engineering (Boston University, January 2014 - May 2017)
- Teaching Assistant, EK127 Introduction to Computation (Boston University, January - December 2014)

SKILLS

Python, Keras, Tensorflow, PyTorch, C, C++, MATLAB, CUDA