

Mahmoud Sobier

Cambridge, MA 02139

+1 (857) 998-9442

msobier@mit.edu

For my projects:

mahow0.github.io

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA

S.B. Computer Science and Philosophy (May 2022) – GPA: 4.7 / 5.0

M.Eng. Computer Science (Fall 2023)

Relevant Coursework:

- Fundamentals of Statistics
- Advanced Natural Language Processing
- Formal Verification
- Elements of Software Construction
- Introduction to Machine Learning
- Probability and Random Variables
- Advanced Multivariable Calculus
- Theory of Computation (Graduate Level)
- Design and Analysis of Algorithms
- Linear Algebra and Optimization
- Philosophy of Language
- Philosophy of Mind

SKILLS

Python LaTeX

Pytorch Coq

Linux Numpy

Scikit TypeScript

Git JavaScript

NodeJS Matplotlib

EXPERIENCE

Mobile Technology Group – *Student Researcher*

January 2021 - Present

- Employed machine learning approaches to detect depression from transcribed clinical interviews
- Constructed a GRU-based hierarchical attention network in Pytorch for combining word-level and sentence-level affective features for boosting classification accuracy
- Incorporated contextualized pretrained embeddings generated by ELMo to help inject models with understanding of syntax and semantics
- Performed transfer learning on pretrained transformer-based language models
- Adjusted loss function weights and used random oversampling to combat class imbalance

Center for Brains, Minds, and Machines – *Student Researcher*

May 2020 - August 2020

- Performed tests on an experimental neural network architecture for visual recognition tasks to improve ML model interpretability
- Implemented standard image classification models (AlexNet, LeNet) in Pytorch to use as a baseline for testing on benchmark datasets like MNIST
- Built and trained GAN and VAE generative models using Pytorch
- Read papers on various generative models like PixelRNN, VQ-VAE, etc.

Department of Electrical Engineering and Computer Science – *Grader for Automata, Computability, and Complexity*

February 2020 - May 2020

- Graded weekly homework assignments on computability and complexity theory for a class of 52 students
- Provided detailed feedback for student solutions

MIT Kavli Institute for Astrophysics and Space Research – *Student Researcher*

June 2019 - January 2020

- Developed a Python image processing pipeline to identify supernova and gamma-ray burst candidates on a dataset of ~20,000 deep sky images taken by the TESS satellite
- Halved the error of existing TESS image alignment software
- Designed a Python interface for off-the-shelf astrometrical command-line tools
- Performed calibration and testing of image alignment by plotting time series data using Matplotlib