Sadie L. Allen

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EDUCATION

Boston University College of Engineering and College of Arts and Sciences **Boston, MA**
M.S. in Computer Engineering **May 2024**
Cumulative GPA: 3.79/4.00

B.S in Computer Engineering, B.A. in Pure and Applied Mathematics (dual degree program) **May 2021**
Cumulative GPA: 3.92/4.00

SKILLS

Programming Languages: Python, C, C++, Java, JavaScript, R, MATLAB
Machine Learning & Data Science: PyTorch, TensorFlow, Scikit-learn, NumPy, Pandas
Development & Infrastructure: Linux, Kubernetes, AWS, GitHub
Databases, Web, & Visualization: MongoDB, SQL, Flask, ReactJS, D3, Vega
Other: Technical Communication & Presentations, Technical Writing & Documentation, Cross-functional Collaboration

RELEVANT EXPERIENCE

Danfoss Power Solutions; Danfoss Innovation Accelerator, Cambridge, MA **June 2021 - December 2021**
Data Science Intern
- Developed models in Python for data-driven sales opportunity analytics including a binary classification model to predict likelihood of closing a sale and a Cox PH model to estimate time-to-close
- Extended sales opportunity model suite with partial dependency plot-based feature importance to recommend specific actions for sales managers

IBM; TJ Watson Research Center, Yorktown Heights, NY **Summer 2020**
Research Intern
- Built a UI in JavaScript using libraries including D3, Vega, and VegaLite
- Conducted extensive literature survey and fault injection experiments on benchmark applications to gain familiarity with Kubernetes and fault diagnosis in distributed systems
- Collaborated with another intern on [Tritium](#), a cross-layer analytics system for diagnosing faults in microservices

Boston University; PEACLab, Boston, MA **Spring 2019 – Spring 2021**
Undergraduate Researcher
- Co-developed [Praxi](#), a tool designed to aid cloud administrators to monitor software present on their systems; Praxi employs a machine learning model to identify applications based on file system changes
- Converted Python research code to industry-ready modules, primarily coding in Python on Linux virtual machines
- Designed hands-on cloud security software [tutorial](#) presented at Middleware 2019 and extended Praxi's capabilities to [version detection](#)

Boston University; Gardner Lab, Boston, MA **Summer 2018**
Programming Assistant
- Organized and documented a data analysis pipeline used to analyze audio and electrophysiology data from zebra finches; migrated pipeline to Github
- Merged, updated, and debugged MATLAB applications used in data processing

PROJECTS

[Q-Harmony](#) (Research project) **Fall 2023 - Spring 2024**
- Applied the Q-learning algorithm to four-part tonal harmony composition
- Designed and trained three separate reinforcement learning models for different compositional tasks
- Conducted human listening study using Amazon Mechanical Turk

[Spotimy](#) (Individual project) **Spring 2022**
- Designed website enabling users to filter their playlists according to audio features from the Spotify API

- Implemented frontend in React.js; allows user to sign in to Spotify, choose a base playlist, filter playlist entries by a variety of features, then save the newly filtered playlist to their Spotify account
- Built backend in Flask; interfaces with Spotify API to get audio features and fetch/create playlists

ContextCheck (Group project)   **Fall 2020 - Spring 2021**
- Trained BERT-based NLP model in Pytorch on a Wikipedia edit database to detect bias in news articles
- Deployed model inference stage in a web application via Flask backend and React.js frontend
- Earned an individual award for Excellence in Senior Capstone Design for my work

Language Usage Correction Program (Group project)   **Spring 2020**
- Coded web scraper utilizing MapReduce algorithm to efficiently collect text data
- Processed crawled data into an adjacency list implemented as a HashMap and used it to check if given pairs of words have appeared together before to determine the likelihood of a grammatical error

TEACHING AND LEADERSHIP EXPERIENCE

Boston University Department of Electrical and Computer Engineering   **August 2019 – May 2024**
- Undergraduate Teaching Assistant for EC330 Applied Algorithms
- Graduate Teaching Assistant for EC440 Operating Systems
- Graduate Teaching Assistant for DS340 Intro to Machine Learning and AI

Boston University Education Resource Center   **Fall 2018 – Spring 2019**
- Tutor (Multivariate Calculus, Differential Equations, Physics I & II)

Tau Beta Pi Engineering Honor Society Eta Chapter   **Fall 2019 – Spring 2021**
- Vice President, Summer 2020 – Spring 2021

Workshop on Machine Learning for Audio Synthesis, ICML 2022; co-organizer   **July 2022**
Machine Learning for Audio Workshop, NeurIPS 2023; co-organizer   **December 2023**