

# Sadie L. Allen

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## EDUCATION

### **Boston University College of Engineering and College of Arts and Sciences**

Bachelor of Science in Computer Engineering

Bachelor of Arts in Pure and Applied Mathematics\*

Cumulative GPA: 3.92/4.00 (Dean's list, all semesters)

\*Dual Degree Program

Boston, MA

May 2021

### **Boston University College of Engineering**

Ph.D. in Computer Engineering

Boston, MA

Expected May 2026

## RESEARCH INTERESTS

Symbolic music generation, audio synthesis, creative applications for machine learning, conditional generative modeling, algorithmic fairness, linguistics.

## COURSEWORK

Deep learning, advanced optimization theory and methods, online learning, learning from data, statistical learning theory, advanced data structures, stochastic processes, software engineering, reinforcement learning, music theory.

## RELEVANT EXPERIENCE

### **Danfoss Power Solutions; Danfoss Innovation Accelerator, Cambridge, MA**

**June 2021 - December 2021**

Data Science Intern

- Developed models 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

- Designed 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

### **Boston University; PEACLab, Boston, MA**

**Spring 2019 – Spring 2021**

Undergraduate Researcher

- Worked on 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 research code to industry-ready modules, primarily coding in Python on Linux virtual machines
- Designed hands-on cloud security software tutorial 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

### **The Jackson Laboratory, Bar Harbor, ME**

**Summer 2017**

Research Intern

- Drafted NIH research proposal
- Performed statistical analyses in R on a large data set containing phenotypic and genotypic information on 378 mice
- Completed research paper detailing findings and presented findings in formal research symposium
- Worked as teaching assistant in R, QTL, and QTL2 workshops for Jackson Lab researchers

## OTHER EXPERIENCE

**Boston University Department of Electrical and Computer Engineering, Boston MA** August 2019 – Present  
Undergraduate Teaching Assistant for EC330 Applied Algorithms, EC414 Introduction to Machine Learning; Graduate Teaching Assistant for EC440 Operating Systems  
**Boston University Education Resource Center, Boston, MA** Fall 2018 – Spring 2019  
Tutor (Multivariate Calculus, Differential Equations, Physics I & II)

## PROJECTS

- **Spotimy**: website enabling users to filter their playlists according to audio features from the Spotify API
- **ContextCheck**: website with BERT-based NLP algorithm fine-tuned to detect bias in news articles
- **Language Usage Correction Program**: with web crawler and language checking algorithm that assesses the grammar of input sentences
- **Modulo Intelligent and Modular Inventory System**: [personal project] that updates content in real-time online at low cost; uses embedded electronics, is easily upgradeable, and can automatically order supplies

## HONORS & AWARDS

- Boston University Claire Boothe Luce Fellowship (2-year Ph.D. fellowship) Fall 2021
- Michael F. Ruane Award for Excellence in Senior Capstone Design Spring 2021
- Senior Design Project Excellence Award Spring 2021
- Undergraduate Research Opportunity Program Award Spring 2019, Fall 2019, Spring 2020, Fall 2020
- Honorable Mention: Computing Research Association's Outstanding Undergraduate Researcher Award Spring 2020
- Best in Class for Sophomores in Boston University's Imagineering Competition Spring 2019
- Boston University Richard D. Cohen Scholarship Fall 2017 – Spring 2018
  - Academic scholarship for full tuition
- Boston University's Lutchen Engineering Summer Fellowship Spring 2017

## CO-CURRICULARS

- Tau Beta Pi Engineering Honor Society Eta Chapter Fall 2019 – Spring 2021
- **Vice President**, Summer 2020 – Spring 2021
- Chordially Yours – A Cappella Group at Boston University Spring 2018 – Spring 2021
- **Music Director**, Summer 2020 – Spring 2021

## PUBLICATIONS AND TALKS

- **Sadie L. Allen**, Mert Toslali, Srinivasan Parthasarathy, Fabio Oliveira, Ayse K. Coskun. Tritium: A Cross-layer Analytics System for Enhancing Microservice Rollouts in the Cloud.
- **Sadie L. Allen**, Anthony Byrne, and Ayse K. Coskun. 2020. Poster Abstract: Version Detection for Software Discovery in the Cloud. *Middleware '20: International Middleware Conference*, December 7–11, 2020, Delft, The Netherlands. ACM, New York, NY, USA, 2 pages.
- Anthony Byrne, **Sadie L. Allen**, Shripad Nadgowda, and Ayse K. Coskun. 2019. Demo Abstract: Praxi: Cloud Software Discovery That Learns from Practice. *Middleware '19: International Middleware Conference*, December 8–13, 2019, Davis, CA, USA. ACM, New York, NY, USA, 2 pages.
- Keller et. al. "Genetic Drivers of Pancreatic Islet Function", *Genetics*, September 2018.

## WORKSHOP ORGANIZATION

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

## SKILLS

**Computer**: C, C++, Java, JavaScript, ReactJS, D3, Vega, Python, R, ROS, GitHub, MATLAB, Linux, RISC-V, Verilog

## OTHER INTERESTS

Running, singing, music production, hiking, ice skating, board games, Latin.