# Sadie L. Allen

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## EDUCATION

**Boston University College of Engineering and College of Arts and Sciences** Boston, MA
Bachelor of Science in Computer Engineering May 2021
Bachelor of Arts in Pure and Applied Mathematics*
Cumulative GPA: 3.92/4.00 (Dean's list, all semesters)
*Dual Degree Program

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

## 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 – May 2024**
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, Pytorch, R, ROS, GitHub, MATLAB, Linux, RISC-V, Verilog, AWS, HTML, CSS