

Roger Burtonpatel

roger.burtonpatel@tufts.edu | rogerburtonpatel.github.io

EDUCATION

Tufts University • Medford, MA

Graduated May 2024

BS in Computer Science & BA in Music, Minor in Portuguese

GPA: 4.0 Unweighted, Dean's List, Summa Cum Laude, Phi Beta Kappa,
Honor's Thesis Summa Cum Laude

RESEARCH

University of Pennsylvania

Fall 2024 - Present

Research Assistant, Principal Investigator: Dr. Steve Zdancewic

- Designed and implemented variadic functions, command-line arguments, and linking in Vellvm
- Proved well-formedness properties on Vellvm's new linker
- Built additional infrastructure to scale Vellvm to large software libraries
- Building and proving correctness properties on optimizations in Vellvm

Tufts University

Fall 2023 - Spring 2024

Senior Honor's Thesis, Computer Science, Advisor: Dr. Norman Ramsey

An Alternative to Pattern Matching, Inspired by Verse: A theoretical comparison of the Verse Calculus and languages with traditional pattern matching. Highest Honors. Publication in preparation.

Queen Mary University of London

Fall 2022

Research Assistant, Principal Investigator: Dr. Marcus Pearce

- Built Python tooling to answer research question, "Has pop music become more or less predictable since 1940?"
- Presented work, along with documentation and testing, to research committee
- Co-author on forthcoming paper on music predictability

Northeastern University, MIND Lab

Spring 2019 - Fall 2022

Research Assistant, Principal Investigator: Dr. Psyche Loui

- Analyzed neural imaging data using specialized tooling (FSL), and created tooling that pipelined its cleaning and analysis
- Wrote all code for a long-term research project on music and cognitive decline
- Automated multiple-month analysis pipeline with parallelism
- Co-author on presentations and presenter of ongoing work at IAMM and CNS in 2020
- Co-author on forthcoming paper on music's ability to slow cognitive decline

WORK EXPERIENCE

GerHub

Fall 2024 - Present

Technical Project Officer

- Strategize and implement modern solutions using technical experience to address infrastructure needs of underserved communities in Mongolia
- Designed and built digital library infrastructure to combat low literacy rates in outer Ulaanbaatar
- Revamp digital presence of umbrella organization through website redesign in Elm

MathWorks

Summer 2023

Software Engineering Intern

- Designed, engineered, and tested Full-Stack Cloud App in Go, Vue.js, and AWS Technologies
- Built a comprehensive testing and deployment suite for future developers
- Directly communicated with and implemented features requested by higher-level admin

BastionZero

Summer 2022

Software Engineering Intern

- Built from scratch, tested, and deployed a logging microservice for the company's bastion in Go/Golang
- Transitioned company logging to MongoDB using Kubernetes pods
- Led successful effort to rethink log capture method to mitigate vulnerabilities

TEACHING EXPERIENCE

Tufts University, Computer Science Department

Fall 2021 - Spring 2024

Instructor/Teaching Fellow/Teaching Assistant

- Primary Student Instructor, CS-4 (TA training course), Fall 2023 - Spring 2024
- Teaching Fellow/Recitation Leader, CS-105: Programming Languages, Spring 2023 - Spring 2024
- Teaching Assistant and lab leader, CS-15: Data Structures, Fall 2021 - Spring 2022

Tufts University, Portuguese Department

Spring 2022 - Spring 2023

Teaching Assistant

PAPERS, PUBLICATIONS, & PRESENTATIONS

R. Burtonpatel. 2024. "An Alternative to Pattern Matching, Inspired by Verse." Senior Honor's Thesis, Tufts University Archive. *Publication in preparation.*

D. Wang, M. R. Geddes, S. B. Hanser, M. Bhasin, R. Burtonpatel, and P. Loui. "Potential of Receptive Music Intervention on Mild Cognitive Impairment: A Resting State fMRI Study." In: Poster presentation at the International Association for Music and Medicine. 2020. URL: <https://www.music-medicine.net/presentations/neurology/>.

D. Wang, M. R. Geddes, S. B. Hanser, M. Bhasin, R. Burtonpatel, and P. Loui. "Potential of Receptive Music Intervention on Mild Cognitive Impairment: A Resting State fMRI Study." In: Poster presentation at the Cognitive Neuroscience Society, Boston. 2020. URL: <https://www.cogneurosociety.org/wp-content/uploads/2020/05/Session-E.pdf>.

FELLOWSHIPS, GRANTS, & AWARDS

Luce Scholarship	Henry Luce Foundation
Phi Beta Kappa: Delta Tufts Chapter	The Phi Beta Kappa Society
James Schmolze Award for Excellence in Computer Science	Tufts University
Etta and Harry Winokur Award for Outstanding Achievement in Music	Tufts University
Laminan Prize in Romance Languages	Tufts University
Undergraduate Research Fund	Tufts University

SERVICE

- Tech Lead, JumboCode (Volunteer service programming club) **Fall 2023 - Spring 2024**
 - Leader of team building app for Boston Emerald Necklace Conservancy
- App developer for nonprofit language-exchange program Potencia **Spring 2023**
- Senior Mentor in Tufts Civic Studies Department **Fall 2023 - Spring 2024**
- Volunteer Librarian in Brazil through Global Citizen Year **Fall 2019 - Spring 2020**
- Volunteer Music Teacher with Brookline Music Program **Fall 2017 - Spring 2019**