Roger Burtonpatel

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EDUCATION

University of Pennsylvania • Philadelphia, PA   **Fall 2025 - Present**
Ph.D. in Computer Science
Advisor: Stephan A. Zdancewic

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 Alterative 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**