Luke Boyer

50 Calumet Street, Boston MA 02115

www.luke-boyer.com

bover.l@northeastern.edu

EDUCATION

Northeastern University, Khoury College of Computer Sciences

BS in Computer Science and Mathematics, Minor in Business Administration *cum laude* September 2017 - August 2021 *Course Work:* Algorithms (graduate), Advanced Algorithms (graduate), Number Theory (I, II), Artificial Intelligence, Databases, Group Theory, Stochastic Processes, Financial Derivatives. Object Oriented Design, Software Dev Major GPA: 3.8/4.0 | Overall GPA: 3.57/4.0

COMPUTER KNOWLEDGE

Languages: fluent: Java, Python, SOL, learning/interested in: Go, Lisp/Clojure, C++, Mathematica, Scala, JS **Projects:**

Code for Community: One of first members that spearheaded the creation of production websites for two local non profit organizations. Programmed in small team to create in-house backend scaffold in Java with few external lightweight apis which was extended separately by the web app dedicated to each non-profit.

Breaking RSA: The current best algorithm for factorizing integers checks all possible factors (i.e $O(\sqrt{i})$). Is there a place where a factor is more likely to be? Hypothesized that for two factor integers *i* there exists functions of the form $f: \mathbb{Z} \to \mathbb{Q}^n$ where f(i) would be correlated to i's smaller prime factor's location, proportional to \sqrt{i} (namely "characteristic" functions). Discovered one such function that yielded non-trivial linear and non-parametric regressions implying the existence of a faster algorithm (probabilistically speaking). Explored gaussian parameter estimate and countless parametric and non-parametric statistical methods assuming a variety of distributions. Developed modular code allowing users to plug and play with their own characteristic functions. Leveraged and traversed scikit-learn's regression module.

EXPERIENCE

Northeastern Math REU

Researcher

- Received a grant to work with another undergraduate and a graduate advisor to research a niche of discrete geometry.
- Generated novel theorems and proofs in classification and analysis in abstract structure of (n_k) -configurations.
- Consolidated discoveries and insights into a formal publication, available at (https://arxiv.org/abs/2108.13565).

Blue Sky Collaborative

Software Engineer Co-Op

- Worked as sole developer to bring CEO's vision of fundraising software platform to market for the first time.
- Constructed from scratch an application that allowed fundraisers to collect donations in an electronic form on any platform. Additionally built an elegant data-hub for organizations to better understand their clients donation behaviors.
- Prudently selected frameworks and ops tools that allowed iteration through new features as quickly as possible.

Chewv

Software Engineer Co-Op (Search Team)

- Tasked with appending features to as well as optimizing the reads from and writes to chewy.com's search-engine.
- Refactored and rearchitected ~50 Python and Java files to increase modularity of aging Autocomplete logic.
- Collaborated in implementing a system to reduce the time to update the search instance with changes in ground-truth product data. By leveraging intermediate (NoSQL) data sources, logical-decoding and Java's concurrency apis, full update time was reduced from ~2hr to ~13min.

Khoury College of Computer Sciences

Teaching Assistant

- Served in a breadth of courses including Fundamentals of Computer Science II and the keystone Algorithms class.
- Analyzed student code and/or mathematical analysis, and provided constructive feedback through the grading process.
- Challenged particularly motivated students with more in depth problems and erudite discussions outside of class.

VOLUNTEER EXPERIENCE

EVKids

Volunteer Tutor/Mentor

- Tutored two local Roxbury resident students in pre-calculus and calculus, creatively covering Newton's proofs.
- Guided senior students in the college application process through essay revisions and program selection.

MY QUINTESSENTIAL READS

Brothers Karamazov | Introduction To Algorithms (clrs) | Tao Te Ching (Stephen Mitchell translation) | The Intelligent Investor Economics for the Common Good | A Farewell to Arms | A Brief History of Time | The Mythical Man Month | The Iliad

May 2020 - December 2020

Westboro. MA

May 2021 - August 2021

Boston, MA

Boston. MA

July 2019 - December 2019

Boston. MA

Boston. MA

Boston, MA

January 2019 - June 2020

September 2018 - May 2020