Tyler James Calabrese

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Education

B.A. in Computer Science and English May 2022

Tufts University, Medford, MA

- GPA: 3.99
- *Summa Cum Laude*, Phi Beta Kappa
- Related Course Work: Senior Capstone in Computer Science, Concurrent Programming, Introduction to Security, Computation Theory, Algorithms, Machine Structures and Assembly Language Programming

Honors + Awards

National Science Foundation *Computer and Information Science and Engineering Graduate Fellowship Program (CSGrad4US)* 2024

Phi Beta Kappa, Delta Chapter of Massachusetts *Member* 2022

Tufts University *Summa Cum Laude* 2022

Work + Leadership Experience

Strike Technologies

Software Developer Jun 2022 - Present

- Lead improvements and firm-wide support for Bazel build tooling
- Developer and product owner of a proprietary C# GUI: plan design direction, implementation strategy, and rollout of new features
- Develop real-time trading infrastructure in C++ with Apache Kafka
- Leverage python, SQL, and C++ to reconcile high volumes of primary and secondary data
- Co-manage a fleet of over 400 application deployments

Intern May - August 2021

Tufts JumboCode, Simply Smiles

Project Manager Aug 2021 - May 2022

- Created an iOS app and companion web portal for staff foster parents to track expenses
- Led team of ten Developers with varying levels of coding experience; one Tech Lead; and one Designer
- Worked with our client to flesh out the scope and design of the project and gather and incorporate feedback
- Part-time (8-20 hours per week), for course credit

Tufts University Computer Science Department

Teaching Fellow, Data Structures Jan 2020 - May 2022

- Managed and trained a staff of 25-30 teaching assistants
- Overhauled grading rubrics and coding style guide
- Helped strategize the course's transition to a remote, then hybrid modality during the Covid pandemic
- Led weekly lab sections to help strengthen students' understanding of key concepts

Teaching Assistant, How Systems Fail Jan - May 2021

- Served as the only undergraduate TA for Fletcher School of Law and Diplomacy courses "How Systems Work" and "How Systems Fail", which taught fundamental CS concepts to public policy scholars

Teaching Assistant, How Systems Work Sep - Dec 2020

Teaching Assistant, Data Structures Sep - Dec 2019

IBM

Software Developer Intern Jun - Dec 2020

- Worked with IBM Cloud's Power IaaS team
- Refactoring and internationalization for Golang backend
- Accessibility and globalization bugfixes for React JS frontend

Service

Black and Pink NYC

Volunteer April 2023 - Present

- Black and Pink is an abolitionist organization that provides assistance, community, and advocacy for incarcerated people who are LGBTQ+ or HIV-positive
- Respond to mailed requests for assistance, information, or general conversation that people have sent to the chapter's P.O. box
- Participate in community-building events with volunteers, including formerly incarcerated members
- Plan events with Morningside Monthly Friends Meeting

Morningside Monthly Friends Meeting

Peace and Social Concerns Committee Member Dec 2023 - Present

- Serve as liaison between Morningside Meeting and Black and Pink's New York City chapter

Skills

- Languages: C++, Bash, Python, C#, HTML
- Technologies: Bazel build system, Jenkins CI, Apache Kafka, Oracle Cloud

Public Speaking

Concurrent C++ using boost::asio Spring 2024

- Guest lecture for Tufts' Concurrent Programming course
- Slides and code samples available here

Bazel for Strike Technologies Spring 2024

- Part of Strike Technologies' ongoing "Strike Talk" series
- Summarized Strike's multi-year effort to migrate our trading platform from Make to Bazel
- Explained recent improvements to the firm's Bazel tooling to a technical audience
- Offered advice for trading model developers looking to switch from Make to Bazel

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Statement of Purpose: Columbia Computer Science

I would like to research usable privacy and security, particularly in cases where it is especially difficult for people to achieve the level of privacy they need. I'd like to learn how people with special security risks use – or avoid – technology to keep themselves safe, and about factors that create higher barriers to achieving privacy and security goals. I became interested in researching these topics professionally after the 2022 *Dobbs* Supreme Court decision prompted me, as a trans man, to consider how my access to reproductive and gender-affirming healthcare might be compromised, learn more about digital surveillance, and build solidarity with other over-policed groups.

My ultimate goal is to become a leading voice on matters of privacy and security, helping people negotiate when data collection is appropriate, identifying potential design improvements for online platforms, and uncovering ways that tech can work better for us all. I see academia as the best avenue towards accomplishing this and plan to pursue tenure-track professor or postdoctoral fellow roles after completing my Ph.D. I enjoy and excel at teaching, and I am excited to conduct impactful research and be part of the academic community. My fellowship through the NSF's CSGrad4US program provides a pathway to achieving this goal.

A variety of professional experiences have enabled me to develop strengths that will serve me well as a researcher. For my undergraduate CS capstone, I was the Project Manager on a year-long volunteer project to create an iOS app that Simply Smiles' staff foster parents could use to submit expenses and an accompanying web interface for their accountant. I was excited for this chance to combine what I had already learned about software development from my classes and internships with the capacity for leadership and teaching I had built through my extensive TA experience, and to strengthen my long-term planning and time management skills.

The project was ambitious, and a huge success. My developers gained programming skills and confidence in themselves. I learned how to motivate others to do their best work; plan complex, long-term projects; and set, communicate, and then meet key milestones. I adapted and persevered when the project felt overwhelming, and was overjoyed in the end to see a final product come together that my client and I were happy with. I am certain the strengths I developed through this experience will serve me well in a research environment.

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After graduating from Tufts, I moved on to a Software Developer role to strengthen my programming fundamentals. My favorite project has been a months-long overhaul of my firm's Bazel setup to make our C++ builds fully reproducible, enabling us to use remote caching and preventing difficult-to-solve bugs caused by differences in developers' build environments. The exploration involved in this project, the time spent figuring things out on my own, and even the occasional dead ends were exciting for me, and since then, I have enjoyed being the leading expert on Bazel at my firm. However, it was actually time outside of work that set me on my current path. What began as a simple effort to get my digital hygiene in order grew into countless weekend and evening hours of poring over news and research about privacy and security.

The more I learned, the more I was reminded of a student I'd had as the TA for "How Systems Work," a Fletcher School course designed to teach policy experts the basics of computing. This student was a human rights journalist who used Twitter to promote her work and needed to prevent her account from being traced back to her identity. Despite not having a technical background, she understood the platform extraordinarily well from having devised sophisticated strategies for protecting herself.

Though I did not know about usable privacy as a field at the time, I recognized an essential lesson in this experience: Software is a tool, and tools are defined by what people accomplish with them. Furthermore, assessing how the risks and benefits of digital technologies are distributed unevenly is important not only as a matter of justice, but because people are resourceful, and those who overcome uncommon privacy and security challenges come away with essential knowledge to share about making technology work better for end users.

I became interested in Columbia's CS program through Lucy Simko's research. I had the opportunity to meet with Prof. Simko recently, and our research interests align closely and I think we would work together well with her as my advisor. Columbia and Barnard's Computer Science departments are excellent, and sharing an academic community with top scholars in other disciplines that my research may touch on, such as law or journalism, would be a great asset as well. I am excited for the opportunity to help build Columbia's usable privacy community and strengthen collaborative relationships with other usable privacy labs in NYC, and I believe Columbia would be a great academic home for me to begin my research career.