

# Jonathan "Sam" Stern

PHD STUDENT · MANNING COLLEGE OF INFORMATION AND COMPUTER SCIENCES · UNIVERSITY OF MASSACHUSETTS AMHERST

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## Education

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### University of Massachusetts Amherst

MS/PHD IN COMPUTER SCIENCE

- Advisor: Emery Berger

Amherst, MA

Fall 2020 - present

### Brandeis University

BS COMPUTER SCIENCE

- Summa Cum Laude
- Honors thesis awarded highest honors

Waltham, MA

Fall 2016 - Spring 2020

## Awards

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**Jay Bonneau Best Paper Award for *Scalene***, USENIX Conference on Operating Systems Design and Implementation, 2023

**Max Chretien Award**, Brandeis University, Department of Computer Science, 2020

## Publications

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Emery Berger, **Sam Stern**, Juan Altmayer Pizzorno. 2023. **Triangulating Python Performance with Scalene**. *Awarded best paper*. OSDI, 51-64. 19.6% acceptance rate.

**Sam Stern**, Joseph Manzano, Nathan Tallent, Emery Berger. **Optimizer: Optimizing Code Using Large Language Models**. In Preparation.

## Research Experience

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### University of Massachusetts Amherst College of Information and Computer Science

ADVISOR: EMERY BERGER

- Research on measuring and improving Python performance
- Published Scalene, a novel Python profiler that leverages probabilistic and threshold-based sampling. 900,000 downloads (approximately 34,700 downloads per month)
- Currently working on Optimator, an automatic optimization tool that uses large language models to generate optimizations and validation logic

Amherst, MA

Fall 2020 - Present

### Pacific Northwest National Lab

MENTOR: NATHAN TALLENT

- Characterized memory inefficiencies in HPC applications in Python
- Worked on Optimator in collaboration with Nathan Tallent and Joseph Manzano

Redmond, WA (remote)

Summer 2022 - Present

### Adobe Research

MENTOR: SHOAB KAMIL

- Developed DSL interpreter in Halide to assess the effects of reorganizing the order of large per-element computations on memory bandwidth

Remote

Summer 2021

## Engineering Experience

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### **Brandeis University, Computer Science Systems Operations Group**

*Waltham, MA*

#### **JUNIOR DEVOPS ENGINEER**

*2018-2020*

- Developed and maintained account registration system using Flask and Shibboleth SSO
- Modified LDAP schema and wrote plugins for RedHat Identity Manager deployment
- Additional support for professors, students, and staff in research and teaching infrastructure

### **Carbon Black**

*Boston, MA*

#### **ENGINEERING INTERN**

*Summer 2019*

- Wrote integration tests for ThreatHunter, a heterogeneous real-time monitoring system.
- Added monitoring capabilities for ThreatHunter queueing services

### **The Motley Fool**

*Alexandria, VA*

#### **SITEOPS INTERN**

*Summer 2018*

- Migrated Django web applications from Python 2.7 to Python 3 to avoid consequences from Python 2 end of life
- Began migration of Django web applications to Docker development environment

### **WBRS 100.1FM**

*Waltham, MA*

#### **TECHNICAL DIRECTOR, STUDIO MANAGER 2016-2020, ASST. TECHNICAL DIRECTOR 2016-17**

*2017-2020*

- Deployed new software for automation and broadcasting, and directed acquisitions for recording studio
- Lead, trained, and scheduled team of engineers in WBRS recording studio

## Teaching Experience

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Spring 2021 **Computer Systems Principles, CICS 230**, Teaching Assistant

*UMass Amherst*

Fall 2020 **Operating Systems, CICS 377**, Teaching Assistant

*UMass Amherst*

Spring 2020 **Capstone Project for Software Engineering, COSI 166B**, Teaching Assistant

*Brandeis University*

Spring 2020 **Structure and Interpretation of Computer Programs, COSI 121B**, Teaching Assistant

*Brandeis University*

Fall 2018

Fall 2019 **Operating Systems, COSI 131A**, Teaching Assistant

*Brandeis University*

Summer 2020

Spring 2018

Spring 2019 **Advanced Programming Techniques in Java, COSI 12B**, Teaching Assistant

*Brandeis University*

## Skills

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Languages **Python, C++, Rust, Go, Javascript, Shell, Java, Ruby**

Technologies **Docker, Git, UNIX Systems Administration**