

# Sara McAllister

PhD Student, Carnegie Mellon University

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## Education

### Carnegie Mellon University

PHD IN COMPUTER SCIENCE

Pittsburgh, PA

Aug. 2019 - Present

### Harvey Mudd College

B.S. IN COMPUTER SCIENCE, GRADUATED WITH HIGH DISTINCTION

Claremont, CA

Aug. 2015 - May 2019

## Research Experience

### Graduate Research Assistant

Carnegie Mellon University

ADVISORS: NATHAN BECKMANN AND GREG GANGER

Aug. 2019 - Present

- Designed system that can decrease flash write rate 40x times while improving miss rate over 10% for social graph workloads
- Analyzed traces from various caching workloads from Facebook for their ability to be cached
- Mentored both a masters student and an undergraduate student on research project

### Undergraduate Research Assistant

UNC Chapel Hill

ADVISOR: DON PORTER

May. 2018 - Aug. 2018

- Investigated the effects of parallelism in SSDs on data-structure design
- Engineered extended attributes on BetrFS, a write-optimized research file system
- Completed theoretical and experimental analysis of node size's effect on write-optimized dictionaries
- Continued collaboration with BetrFS group through next year resulting in a publication and multiple poster presentations

### Research Assistant

Harvey Mudd College

ADVISOR: ANNA AHN

May. 2016 - Jun. 2017

- Led analysis of data and comparison of three-legged walking to solo walking
- Constructed and tested an analysis package for gait in Matlab from wearable device data
- Mentored both a high school student on research project

## Publications

### The CacheLib Caching Engine: Design and Experiences at Scale

OSDI 2020

Benjamin Berg, Daniel S. Berger, [Sara McAllister](#), Isaac Grosof, Sathya Gunasekar, Jimmy Lu, Michael Uhlar, Jim Carrig, Nathan Beckmann, Mor Harchol-Balter, Gregory R. Ganger

### Small Refinements to DAM Can Have Big Consequences for Data-Structure Design

SPAA 2019

Michael A. Bender, Alexhander Conway, Martin Farach-Colton, William Jannen, Yizheng Jiao, Rob Johnson, Eric Knorr, [Sara McAllister](#), Nirjhar Mukherjee, Prashant Pandey, Donald E. Porter, Jun Yuan, Yang Zha

### Modeling Parallelism in SSDs

NVMW 2019

[Sara McAllister](#), Nirjhar Mukherjee, Alexhander Conway, Eric Knorr, Yizheng Jiao, Prashant Pandey, Yang Zhan, Michael A. Bender, Martin Farach-Colton, William Jannen, Donald E. Porter, Jun Yuan, Rob Johnson

Poster

### Measuring Stride Intervals using Wearable Devices for Solo and 3-legged Walking

MSSE 2017

[Sara McAllister](#), Anna N Ahn, Cassandra Davis, Pallavi Deshpande, Leanna M Namovic, Kenneth S Robertson, N P Reeves, John G Milton

Poster

## Honors & Awards

- |      |  |             |
|------|--|-------------|
| 2019 | <b>Class of '94 Award</b> , Outstanding CS graduate in a combination of course work, research, and service | Harvey Mudd |
| 2019 | <b>Departmental Honors</b> , Computer Science Department   | Harvey Mudd |
| 2019 | <b>Clinic Team Award</b> , Outstanding Performance on a team   | Harvey Mudd |
| 2019 | <b>Outstanding Undergraduate Researcher Award</b> , Honorable Mention                                      | CRA         |
| 2019 | <b>Best Malware</b> , Most creative malware during capture the flag competition                            | Yelp        |

## Industry Experience

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### Yelp

San Francisco, CA

SOFTWARE ENGINEERING INTERN

Summer 2019

- Designed and implemented a Python library to update MySQL users and privileges
- Planned and started gradual roll out system which successfully finished after internship

### Pure Storage

Claremont, CA

HARVEY MUDD COLLEGE COMPUTER SCIENCE CLINIC

Aug. 2018 - May 2019

- Designed and implemented consistency mechanisms on top of NFS for a two controller environment
- Provided failover protocols for both VM and controller failure
- Technical lead on team of 4 in the areas of file systems and network partitioning solutions

### Facebook

Menlo Park, CA

SOFTWARE ENGINEERING INTERN

Summer 2017

- Developed and tested a Python library to compare user responses and coordinate with automation systems
- Created a React and Hack PHP user interface to receive and store user inputs

## Outreach and Service

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### Inclusivity Initiatives

Carnegie Mellon University

COMPUTER SCIENCE DEPARTMENT, PHD PROGRAM

July 2020 - Present

- Spearheaded grass-roots development of inclusivity initiatives with 2 other PhD students
- Created report with student experiences and 8 concrete action items to improve diverse student experience within department
- Developed course about diversity, equity, and inclusivity for incoming PhD students

### Faculty Search - Student Committee

Harvey Mudd College

COMPUTER SCIENCE DEPARTMENT

Spring 2019

### Science Bus

Harvey Mudd College

VOLUNTEER AND TREASURER (APRIL 2016 - MAY 2017)

Aug. 2015 - May 2018

- Instructed 4th and 5th graders in hands-on science activities at local underserved elementary schools
- Managed about \$3000 of grant money to ensure funding for supplies through entire year

### STEAM:coders

Harvey Mudd College

SITE COORDINATOR AND VOLUNTEER INSTRUCTOR

Summer 2016

- Led fun activities for 25 middle-school aged students while students learned basic computer science concepts
- Helped students create Scratch projects
- Coordinated parent contact including sign-in/out, admittance into program, and make-up work reminders

## Teaching Experience

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2019	<b>CS 131 Spring</b> , Programming Languages, Grader and Tutor	Harvey Mudd
2018	<b>CS 105 Spring and Fall</b> , Introduction to Computer Systems, Grader and Tutor	Harvey Mudd
2017	<b>CS 70 Fall</b> , Data Structures and Programming Development, Grader and Tutor	Harvey Mudd
2017	<b>CS 60 Spring</b> , Principles of Computer Science, Grader and Tutor	Harvey Mudd
2016	<b>CS 5 Green Fall</b> , Introduction to Biology and Computer Science, Grader and Tutor	Harvey Mudd
2016	<b>CS For All</b> , Introduction to CS on edX, Content development and production assistant	Harvey Mudd