

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

Publications

Kangaroo: Caching Billions of Tiny Objects on Flash

SOSP 2021

Sara McAllister, Benjamin Berg, Julian Tutuncu-Macias, Juncheng Yang, Sathya Gunasekar, Jimmy Lu, Daniel Berger, Nathan Beckmann, Gregory R. Ganger

Acceptance Rate: 16%

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

Acceptance Rate: 18%

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

SPAA 2019

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

Acceptance Rate: 40%

Talks and Posters

Building a Stronger, More Just Academic Community Through Mandatory Anti-bias Learning

UPitt Diversity Forum 2021

Kangaroo: Caching Billions of Objects on Flash

Cache@Scale 2020, Facebook

Modeling Parallelism in SSDs

NVMW 2019, Poster

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

MSSE 2017, Poster

Honors & Awards

2021 Graduate Fellowship, NDSEG

DoD

2021 Graduate Research Fellowship, National Science Foundation (declined)

NSF

2019 Class of '94 Award, Outstanding CS graduate in a combination of course work, research, and service

Harvey Mudd

2019 Departmental Honors, Computer Science Department

Harvey Mudd

2019 Clinic Team Award, Outstanding Performance on a team

Harvey Mudd

2019 Outstanding Undergraduate Researcher Award, Honorable Mention

CRA

2019 Best Malware, Most creative malware during capture the flag (CTF) competition

Yelp

Research Experience

Graduate Research Assistant

Carnegie Mellon University

ADVISORS: NATHAN BECKMANN AND GREG GANGER

Aug. 2019 - Present

- Designed system that decreases flash write rate by 40x while improving miss ratio >10% for large-scale small-object (~100 byte) workloads
- Analyzed traces from various caching workloads to identify important commonalities between workloads
- Mentored a masters and an undergraduate student on research project

Undergraduate Research Assistant

UNC Chapel Hill

SUPERVISOR: 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

Research Assistant

Harvey Mudd College

SUPERVISOR: 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

Industry Experience

Microsoft Research

RESEARCH INTERN

Remote

Summer 2021

- Researched in-kernel disaggregated memory solutions

Yelp

SOFTWARE ENGINEERING INTERN

San Francisco, CA

Summer 2019

- Designed and implemented a Python library to track and update MySQL users and privileges
- Planned and started gradual roll out system, fully rolled out after internship across production

Pure Storage

HARVEY MUDD COLLEGE COMPUTER SCIENCE CLINIC

Claremont, CA

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

SOFTWARE ENGINEERING INTERN

Menlo Park, CA

Summer 2017

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

Outreach and Service

Inclusivity Initiatives

COMPUTER SCIENCE DEPARTMENT, PHD PROGRAM

Carnegie Mellon University

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 mandatory course about diversity, equity, and inclusivity for incoming PhD students

Faculty Search - Student Committee

COMPUTER SCIENCE DEPARTMENT

Harvey Mudd College

Spring 2019

Science Bus

VOLUNTEER AND TREASURER (APRIL 2016 - MAY 2017)

Harvey Mudd College

Aug. 2015 - May 2016

- 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

SITE COORDINATOR AND VOLUNTEER INSTRUCTOR

Harvey Mudd College

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

2021	15-996 Spring , Diversity, Equity, and Inclusion in Computer Science and Society, Creator and Moderator	CMU
2019	CS 131 Spring , Programming Languages, Grader and Tutor	Harvey Mudd
2018	CS 105 Spring and Fall , Introduction to Computer Systems, Grader and Tutor	Harvey Mudd
2017	CS 70 Fall , Data Structures and Programming Development, Grader and Tutor	Harvey Mudd
2017	CS 60 Spring , Principles of Computer Science, Grader and Tutor	Harvey Mudd
2016	CS 5 Green Fall , Introduction to Biology and Computer Science, Grader and Tutor	Harvey Mudd
2016	CS For All , Introduction to CS on edX, Content development and production assistant	Harvey Mudd