

Sara McAllister

PhD Candidate, Carnegie Mellon University

✉ sjmcalli@cs.cmu.edu | 🏠 saramcallister.github.io | 📧 [saramcallister](#) | 🎓 [saramcallister](#)

Education

Carnegie Mellon University

PHD IN COMPUTER SCIENCE, ADVISORS: NATHAN BECKMANN AND GREG GANGER

Pittsburgh, PA

Aug. 2019 - Present

Harvey Mudd College

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

Claremont, CA

Aug. 2015 - May 2019

Honors and Awards

2022	Graduate Student Service Award , For the development of 15-996 CS-JEDI	CMU
2021	Best Paper Award	SOSP
2021	Graduate Fellowship , NDSEG	DoD
2021	Graduate Research Fellowship , GRFP (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

Publications

Kangaroo: Caching Billions of Tiny Objects on Flash

SOSP 2021 (Best Paper)

[Sara McAllister](#), Benjamin Berg, Julian Tutuncu-Macias, Juncheng Yang, Sathya Gunasekar, Jimmy Lu, Daniel S. Berger, Nathan Beckmann, Gregory R. Ganger

Acceptance Rate: 16%

External-memory Dictionaries in the Affine and PDAM Models

ACM ToPC

Michael A. Bender, Alex 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

September 2021

The CacheLib Caching Engine: Design and Experiences at Scale

OSDI 2020

Benjamin Berg, Daniel S. Berger, [Sara McAllister](#), Isaac Grosz, 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

Caching on Flash: Kangaroo and Beyond

Meta, 11 Mar 2022

Kangaroo: Caching Billions of Objects on Flash

Microsoft Research, 22 Nov 2021

Kangaroo: Caching Billions of Objects on Flash

SOSP, 27 Oct 2021

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

UPitt Diversity Forum, 28 Jul 2021

Kangaroo: Caching Billions of Objects on Flash

Cache@Scale, 4 Mar 2021

Modeling Parallelism in SSDs

NVMW, Poster, 10 Mar 2019

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

MSSE, Poster, 2 Jun 2017

Professional Experience

Graduate Research Assistant

Carnegie Mellon University

NATHAN BECKMANN AND GREG GANGER

Aug. 2019 - Present

- Researched systems that decrease cost of providing internet services at scale
- Analyzed traces from various caching workloads to identify important commonalities between workloads
- Simulated and implemented flash caching systems on different flash interfaces

Microsoft Research

Remote

RESEARCH INTERN WITH AMAR PHANISHAYEE

Summer 2022

- Researched GPU acceleration for deep learning as part of Project Fiddle

Microsoft Research

RESEARCH INTERN WITH DANIEL BERGER

- Researched in-kernel disaggregated memory solutions

Remote

Summer 2021

Yelp

SOFTWARE ENGINEERING INTERN

- 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

San Francisco, CA

Summer 2019

Pure Storage

HARVEY MUDD COLLEGE COMPUTER SCIENCE CLINIC

- 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

Claremont, CA

Aug. 2018 - May 2019

Undergraduate Research Assistant

DON PORTER

- 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

UNC Chapel Hill

May 2018 - Aug. 2018

Facebook

SOFTWARE ENGINEERING INTERN

- Developed and tested a Python library to restart and repair development servers
- Created a React and Hack PHP user interface to receive and store user inputs

Menlo Park, CA

Summer 2017

Research Assistant

ANNA AHN

- 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

Harvey Mudd College

May. 2016 - Jun. 2017

Service and Outreach

PhD Admissions Committee

COMPUTER SCIENCE DEPARTMENT

- PhD student in charge of reading applications for systems area

Carnegie Mellon University

2021 - 2022

Meeting Coordinator

PARALLEL DATA LAB (PDL)

- Invited and scheduled talks for PDL weekly talk series

Carnegie Mellon University

Fall 2021

Inclusivity Initiatives

COMPUTER SCIENCE DEPARTMENT, PhD PROGRAM

- Spearheaded grass-roots development of inclusivity initiatives with 2 other PhD students
- Developed 15-996 CS-JEDI, a mandatory course about diversity, equity, and inclusivity for incoming CMU CSD PhD students
- Created about student experiences and developed 8 concrete action items to improve inclusion within department
- Awarded Graduate Student Service Award for contributions to course

Carnegie Mellon University

July 2020 - Spring 2022

Faculty Search - Student Committee

COMPUTER SCIENCE DEPARTMENT

- Interviewed each invited faculty candidate

Harvey Mudd College

Spring 2019

Science Bus

VOLUNTEER AND TREASURER (APRIL 2016 - MAY 2017)

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

Harvey Mudd College

Aug. 2015 - May 2018

STEAM:coders

SITE COORDINATOR AND VOLUNTEER INSTRUCTOR

- Led activities for 25 middle-school aged students while students learned basic computer science concepts
- Helped students from disadvantaged communities create Scratch projects

Harvey Mudd College

Summer 2016

Teaching

Carnegie Mellon University

Parallel Computer Architecture and Programming (15-418/618)

TA, Spring 2022

Diversity, Equity, and Inclusion in Computer Science and Society (15-996)

Co-Creator and TA, Spring 2021

Harvey Mudd College

Programming Languages (CS131)

Grader and Tutor, Spring 2019

Introduction to Computer Systems (CS105)

Grader and Tutor, Fall 2018

Introduction to Computer Systems (CS105)

Grader and Tutor, Spring 2018

Data Structures and Programming Development (CS70)

Grader and Tutor, Fall 2017

Principles of Computer Science (CS60)

Grader and Tutor, Spring 2017

Introduction to Biology and Computer Science (CS5 Green)

Grader and Tutor, Fall 2016

Invited Speaker

Data Center Computing (CMU 18-847C)

Spring 2022

CS-JEDI: Intro to Justice, Equity, Diversity, and Inclusion in Computer Science (CMU 15-996)

Spring 2022

Computer Systems (CMU 18-213)

Fall 2021

Storage Systems (CMU 18-746)

Fall 2021

Mentoring

Priyal Suneja (University of Washington CS PhD student)

Fall 2021 - Present

Julian Tutuncu-Macias (CMU CS undergraduate student)

Fall 2019 - Spring 2021

Sheng Xu (CMU CS masters student)

Spring 2020