

Amrita Mazumdar

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Research Interests

Computer Systems & Architecture · Graphics & AR/VR · Video Streaming & Storage

Recent Employment

- July 2020 - Present - Founder & CEO, Vignette Inc.
- July 2020 - Present - CoMotion Postdoctoral Fellow, University of Washington.
Fellowship to explore the commercialization potential of my research innovations
- 2018 - Research Intern, Facebook Reality Lab.
Design space exploration for deep neural network performance for AR/VR. Manager: Anton Kaplanyan
- 2017 - Research Intern, Oculus Research.
Explored memory subsystems for AR/VR headsets. Manager: Warren Hunt

Education

University of Washington

- June 2020 - *PhD in Computer Science & Engineering*
- March 2017 - *Masters of Computer Science & Engineering*
Advisors: Luis Ceze & Mark Oskin

Columbia University

- May 2014 - *Bachelor of Science in Computer Engineering*

Publications

CONFERENCE

- 2020 - *TASM: A Tile-Based Storage Manager for Video Analytics*
M. Daum, B. Haynes, D. He, A. Mazumdar, M. Balazinska, L. Ceze, A. Cheung
[arXiv 2020](#).
- VisualWorldDB: A DBMS for the Visual World*
B. Haynes, M. Daum, A. Mazumdar, M. Balazinska, L. Ceze, A. Cheung, M. Oskin
[CIDR](#), 2020.
- 2019 - *Vignette: Perceptual Compression for Video Storage and Processing Systems*
A. Mazumdar, B. Haynes, M. Balazinska, L. Ceze, A. Cheung, M. Oskin
[ACM Symposium on Cloud Computing \(SoCC\)](#), 2019.
- Visual Road: A Video Data Management Benchmark*
B. Haynes, A. Mazumdar, M. Balazinska, L. Ceze, A. Cheung
SIGMOD 2019.

2018 *LightDB: A DBMS for Virtual Reality Video*
 B. Haynes, A. Mazumdar, A. Alaghi, M. Balazinska, L. Ceze, A. Cheung
[Proceedings of the VLDB Endowment \(PVLDB\) 11\(10\), 2018.](#)

Application Codesign of Near-Data Processing for Similarity Search
 V. T. Lee, A. Mazumdar, C. del Mundo, A. Alaghi, L. Ceze, M. Oskin
[IEEE International Parallel and Distributed Processing Symposium \(IPDPS\), 2018.](#)

2017 *Exploring In-Camera Computation-Communication Tradeoffs*
 A. Mazumdar, T. Moreau, S. Kim, A. Alaghi, L. Ceze, M. Oskin, and V. Sathe
[IEEE International Symposium on Workload Characterization \(IISWC\), 2017.](#)

A Hardware-Friendly Bilateral Solver for Real-Time Virtual Reality Video
 A. Mazumdar, A. Alaghi, J. T. Barron, D. Gallup, L. Ceze, M. Oskin, and S. M. Seitz
[High-Performance Graphics \(HPG\), 2017.](#)

2010 *Principles and Techniques of Schlieren Imaging Systems*
 A. Mazumdar
[Technical Report CUCS-016-13, 2010.](#)

IN PREPARATION

Learning Optimal Parameters for AR/VR Video on Fixed-Function Accelerators
 A. Mazumdar, B. Haynes, M. Daum, M. Balazinska, L. Ceze, M. Oskin.
 In Preparation.

Leveraging Irregularity in Virtual Reality Video Decode Hardware
 A. Mazumdar, B. Haynes, M. Daum, M. Balazinska, L. Ceze, M. Oskin.
 Under Review.

VFS: A File System for Video Analytics
 B. Haynes, M. Daum, D. He, A. Mazumdar, M. Balazinska, L. Ceze, A. Cheung
 Under Review.

Honors & Awards

2020 UW CoMotion Commercialization Fellowship
 UW CoMotion STEP Award Winner

2019 UW CoMotion Innovation Gap Fund Winner
 SoCC Best Poster Award, for the poster accompanying the SoCC 2019 paper

2018 NCWIT Collegiate Award Finalist

2017 UW Allen School Madrona Prize Runner-Up

2014 Google Anita Borg Memorial Fellowship

2013 CRA-W Distributed Research Experience for Undergraduates (DREU) Fellowship

Talks & Presentations

2020 **Wild and Crazy Ideas**, ASPLOS, Lausanne, Switzerland
 A Picture is Worth 1000 Bytes; Everything Else is AI

- 2019 **Asilomar Microcomputer Workshop**, Asilomar, CA
 Vignette: Perceptual Compression for Video Storage and Processing Systems
GOMACTech, Albuquerque, NM
 Vignette: Perceptual Compression for Video Storage and Processing Systems
!!Con West, Santa Cruz, CA
 How to throw out 95% of pixels in virtual reality, without anyone noticing!
UC Santa Cruz, Santa Cruz, CA
 Vignette: Perceptual Compression for Video Storage and Processing Systems
UW Photomedia Seminar, Seattle, WA
 Vignette: Perceptual Compression for Video Storage and Processing Systems
- 2018 **ASPLUW Retreat**, Bainbridge Island, WA
 LightDB and Vignette: Database and Storage Systems for Virtual Reality Video
Google, Kirkland, WA
 LightDB and Vignette: Database and Storage Systems for Virtual Reality Video
SRC Techcon, Austin, TX
 A Hardware-Friendly Bilateral Solver for Real-Time Virtual Reality Video
UW Virtual Reality Seminar, Seattle, WA
 A Hardware-Friendly Bilateral Solver for Real-Time Virtual Reality Video
- 2017 **Oculus Research**, Redmond, WA
 A Hardware-Friendly Bilateral Solver for Real-Time Virtual Reality Video
- 2016 **UW PLSE Retreat**, Seattle, WA
 Exploring In-Camera Computation-Communication Tradeoffs
UW CSE Industrial Affiliates Annual Meeting, Seattle, WA
 Exploring In-Camera Computation-Communication Tradeoffs
- 2014 **Grace Hopper Celebration of Women in Computing**, Phoenix, AZ
 CRA-W Panel: Applying to Computer Science Graduate Programs

Teaching

- 2017 Teaching Assistant, *Hardware-Software Interface (CSE 351)*, University of Washington
- 2016 Teaching Assistant, *Computer Architecture (CSE 548)*, University of Washington
- 2015 Tutor, *Hardware-Software Interface (CSE 351)*, University of Washington
 Tutor, *Programming Languages (CSE 341)*, University of Washington
- 2014 Instructor, *Emerging Scholars Program (COMS 3998)*, Columbia University
 Teaching Assistant, *Embedded Systems Design (COMS 4840)*, Columbia University
- 2013 Laboratory Assistant, *Introduction to Java*, Columbia Science Honors Program
- 2012 Teaching Assistant, *Object-Oriented Programming (COMS 1007)*, Columbia University

Service

DEPARTMENT SERVICE

- 2017-20 Member, *University of Washington CSE Graduate Admissions Committee*
- 2015-20 Moderator, *University of Washington CSE Diversity-Allies Listserv*
- 2015-20 Member, *University of Washington CSE Prospective Student Committee*
- 2016 Co-Chair, *University of Washington CSE Prospective Student Committee*
Co-Chair, *University of Washington CSE TGIF Committee*
- 2015 Mentor, *University of Washington CSE Graduate Mentoring*
Member, *University of Washington CSE Prospective Student Committee*

REVIEWS

- 2021 Review Committee, *EuroSys Doctoral Workshop*
- 2018 Review Committee, *ASPLOS Shadow PC*
- 2017 External Reviewer, *IEEE Micro*
- 2016 Review Committee, *Grace Hopper Celebration of Women in Computing*

OUTREACH

- 2017-19 Chair, *University of Washington CSE Women's Research Day*
- 2017 Social Media Editor, *ACM SIGARCH*
- 2015 Co-Chair, *University of Washington CSE Women's Research Day*
- 2015 Mentor, *ICRA 2015, Go, Girl Go! Forum*
- 2013 Vice President, *Columbia Women in Computer Science*

STUDENT ADVISING

- 2017-19 Lucas Cendes (UW CSE)
- 2017-19 Zachary Calipes (UW EE)
- 2016 Austin Archiega (UW EE)
Umaymah Khan (UW EE)
- 2015 Beck Pang (UW EE)
Yufang Sun (UW CSE)