

Amrita Mazumdar

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Research Interests

Computer Systems & Architecture · Graphics & AR\VR

Recent Employment

- Present CoMotion Postdoctoral Fellow, University of Washington.
Funded fellowship to explore the commercialization potential of my research innovations
- 2018 Research Intern, Facebook Reality Lab.
Manager: Anton Kaplanyan
- 2017 Research Intern, Oculus Research.
Manager: Warren Hunt

Education

- 2020 **University of Washington**
PhD in Computer Science & Engineering
- 2017 *Masters of Computer Science & Engineering*
Advisors: Luis Ceze & Mark Oskin
- 2014 **Columbia University**
Bachelor of Science in Computer Engineering

Publications

PRE-PRINT

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.

TASM: A Tile-Based Storage Manager for Video Analytics
M. Daum, B. Haynes, D. He, A. Mazumdar, M. Balazinska, L. Ceze, A. Cheung, M. Oskin
[arXiv 2020](#).

REFEREED CONFERENCE OR JOURNAL

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

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

REVIEWS

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

OUTREACH

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

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)