Amrita Mazumdar

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Research Interests

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

Recent Employment

2020-Present	Founder & CEO, Vignette Inc.
2020-Present	CoMotion Postdoctoral Fellow, University of Washington. Fellowship to explore the commercialization potential of my research innovations
	Research Intern, Facebook Reality Lab.
2018	Design space exploration for deep neural network performance for AR/VR. Manager: Anton Kaplanyan
2017	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.
Best Poster Award Winner.

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, Albequerque, 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

Reviews

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

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*

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)