Aishwarya Ganesan
Ph.D. Candidate
University of Wisconsin–Madison

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Research Interests	*Primary:* Distributed Systems, Storage and File Systems, and Operating Systems *Secondary:* Networks and Mobile Computing

Education

University of Wisconsin – Madison	3.83/4.0
Ph.D. in Computer Sciences	2015–
Advisors: Andrea Arpaci-Dusseau and Remzi Arpaci-Dusseau	
Indian Institute of Technology Bombay	9.7/10
M.Tech in Computer Science and Engineering	2011–2013
Advisor: S. Sudarshan	
Coimbatore Institute of Technology, Anna University	9.54/10
B.Tech in Information Technology	2006–2010

Conference Publications

Ramnatthan Alagappan, **Aishwarya Ganesan**, Eric Lee, Aws Albarghouthi, Vijay Chidambaram, Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau. *Protocol-Aware Recovery for Consensus-Based Storage.* In Proceedings of the 16th USENIX Conference on File and Storage Technologies, February 2018. (*Best Paper Award*) **Fast '18**

Aishwarya Ganesan, Ramnatthan Alagappan, Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau. *Redundancy Does Not Imply Fault Tolerance: Analysis of Distributed Storage Reactions to Single Errors and Corruptions.* In Proceedings of the 15th USENIX Conference on File and Storage Technologies, 2017. (*Best Paper Nominee*) **Fast '17**

Ramnatthan Alagappan, **Aishwarya Ganesan**, Yuvraj Patel, Thanumalayan Sankaranarayana Pillai, Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau. *Correlated Crash Vulnerabilities.* In Proceedings of the 12th USENIX Conference on Operating Systems Design and Implementation, November 2016. **Osdi '16**

Swati Rallapalli, **Aishwarya Ganesan**, Krishna Chintalapudi, Venkat Padmanabhan, Lili Qiu. *Enabling Physical Analytics in Retail Stores using Smart Glasses.* In Proceedings of the 20th Annual International Conference on Mobile Computing and Networking, September 2014. **MobiCom '14**

Under Submission

Ramnatthan Alagappan, **Aishwarya Ganesan**, Jing Liu, Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau. *Fault-Tolerance, Fast and Slow: Exploiting Failure Asynchrony in Distributed Systems.*

Journal Publications

Aishwarya Ganesan, Ramnatthan Alagappan, Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau. *Redundancy Does Not Imply Fault Tolerance: Analysis of Distributed Storage Reactions to File-System Faults.* ACM Transactions on Storage (TOS), September 2017. **Acm Tos**

Aishwarya Ganesan, Ramnatthan Alagappan, Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau. *Redundancy Does Not Imply Fault Tolerance: Analysis of Distributed Storage Reactions to Single Errors and Corruptions.* ;login: The USENIX Magazine, Summer 2017. **Usenix ;login:**

OTHER PUBLICATIONS	**Aishwarya Ganesan**, Swati Rallapalli, Krishna Chintalapudi, Venkat Padmanabhan, Lili Qiu. *Tracking User Browsing on a Demo Floor*, 2014. **DEMO at MOBICOM '14**
	Rajalakshmi Nandakumar, Swati Rallapalli, Krishna Chintalapudi, Venkat Padmanabhan, Lili Qiu, **Aishwarya Ganesan**, Saikat Guha, Deepanker Aggarwal, Aakash Goenka. *Physical Analytics: A New Frontier for (Indoor) Location Research.* Microsoft Technical Report no. MSR-TR-2013-107, October 2013. **TECH REPORT**

HONORS & AWARDS	FAST Best Paper Award	2018
	Grace Hopper Celebration of Women in Computing Scholarship	2017
	FAST Best Paper Award Nominee	2017
	Departmental Research Fellowship, University of Wisconsin – Madison	2015
	Ranked Second in the graduating class of M.Tech, CSE at IIT Bombay	2013
	Judges' Special Mention, Yahoo's HackU, IIT Bombay	2012
	Ranked Nationally in top 0.1 percentile, Graduate Aptitude Test in Engineering	2011
	Department Gold Medal for Ranking First during Under graduation	2010
	Tata Consultancy Services endowed Best Student Award	2010

WORK EXPERIENCE	**Microsoft Research** *Research Intern*, Systems Research Group Mentor: Anirudh Badam	Redmond, WA SUMMER '17
	Microsoft Research *Research Fellow*, Mobility, Networks, and Systems Group Mentors: Krishna Chintalapudi and Venkat Padmanabhan	Bangalore, India JUL '13 – APR '15
	United Online Software Development Limited *Software Engineer*	Hyderabad, India JUL '10 – JUN '11

TEACHING	**Distributed Systems**, *University of Wisconsin – Madison* Guest Lecturer	FALL '17
	Design and Analysis of Algorithms, *Indian Institute of Technology, Bombay* Teaching Assistant	SPRING '13
	Implementation Techniques of DBMS, *Indian Institute of Technology, Bombay* Teaching Assistant	AUTUMN '12

RESEARCH PROJECTS	*Protocol-Aware Recovery for Consensus-Based Storage* FAST '18 We developed *protocol-aware recovery* (PAR), a new technique that exploits protocol-specific knowledge to correctly recover from storage faults in distributed systems. A key aspect of PAR is that it is not specific to a system; rather, it exploits the properties of *protocols* common to many distributed systems. We applied PAR to two different systems, LogCabin and ZooKeeper, that implement a replicated state machine.	
	Analysis of Distributed Storage Reactions to Single Errors and Corruptions FAST '17 We analyze how distributed storage systems behave in the presence of storage faults such as data corruption and block errors. We find that a single fault introduced in one node of the cluster can induce catastrophic outcomes such as data loss, corruption, and unavailability. We also uncover new fundamental insights on how current reliability measures in these systems fall short.	

Correlated Crash Vulnerabilities OSDI '16

We study whether distributed storage systems violate user-level expectations in the presence of correlated crashes. We build PACE, a framework that systematically generates and explores correlated crash states that can occur in a distributed execution. PACE found a total of 26 vulnerabilities across eight systems.

NVC: Hidden Communication Between Videos and Smart Glasses

We designed and implemented Near Vision Communication (NVC) that uses the visual link between a display device and the smart-glasses camera for transferring data. We built a system that embeds hidden information into video frames; while this information is imperceptible to human eyes, it can be extracted when the viewer watches the video through smart glasses.

Enabling Physical Analytics in Retail Stores Using Smart Glasses MOBICOM '14

We built a system that would enable the tracking of physical browsing by users in indoor spaces such as retail stores. Using a combination of first-person vision and inertial sensing using smart glasses, we track physical behaviors like walking, dwelling, gazing, and reaching out. We also used the data gathered from smart-glasses to infer the product layout of retail stores.

Query Optimizer for Big Data Master's Thesis

We designed and built a cost-based query optimizer that provides an optimized plan for queries written in declarative languages built over systems like MapReduce by taking distributed execution into account. The query optimizer was integrated into Hyracks, a data parallel platform to run data intensive jobs on a cluster.

PRESENTATIONS	**Fault Analysis of Scalable Distributed Storage**	
	Talk at SCI Labs Kick-off Meeting	APR '17
	Redundancy Does Not Imply Fault Tolerance	
	Poster at SCI Labs Kick-off Meeting	APR '17
	Talk and Poster at FAST	MAR '17
	Invited Poster at NetApp University Day	FEB '17
	Correlated Crash Vulnerabilities	
	Talk at Microsoft Gray Systems Lab	JUN '16
	Tracking User Browsing on a Demo Floor	
	Invited Demo and Poster at Microsoft Research's TechVista	JAN '15
	Invited Demo and Poster at COMSNETS	JAN '15
	Demo and Poster at MobiCom	SEP '14
SERVICE	FAST, External Reviewer	2018
	EuroSys, Contributor to PC Reviews	2017
	WACM Student Mentor	2017
	OSDI, External Reviewer	2016