

Harshitha Menon

CONTACT INFORMATION	Website: http://harshithamenon.com E-mail: harshitha.menon@gmail.com Phone: 650-741-4260	
RESEARCH INTEREST	Parallel Computing, HPC application load balancing, parallel algorithms, distributed Systems	
EDUCATION	University of Illinois at Urbana–Champaign, IL, USA <i>PhD Candidate in Computer Science</i> Aug 2012 – Present GPA: 3.91/4.0 Advisor: Prof Laxmikant Kale	
	University of Illinois at Urbana–Champaign, IL, USA <i>Master of Science in Computer Science</i> Aug 2010 – May 2012 GPA: 3.91/4.0 Advisor: Prof Laxmikant Kale	
	College of Engineering, Trivandrum, Kerala, India <i>Bachelor of Technology in Computer Science</i> Jul 2002 – May 2006 Percentage: 78.4 (Ranked 5th out of 66)	
AWARDS AND HONORS	<ul style="list-style-type: none">• Recipient of ACM/IEEE-CS George Michael Memorial HPC Fellowship - 2014.• Best Paper Award at Cluster 2014• Awarded Feng Chen Memorial Award by CS department at UIUC in recognition of the best paper at Cluster 2014• Best Student Paper finalist at SC 2013• Received Google Anita Borg Scholarship - 2014.• Anita Borg finalist - 2013.• Awarded Siebel Scholarship Class of 2012 - The Siebel Scholars Foundation rewards excellence among the top students at the leading graduate schools.• Best Summer Intern Poster at LLNL - 2013• Member of the PPL team, the finalist for HPC challenge class 2 award 2012.• Awarded Google Fellowship for Employees, 2010 - Competitive fellowship granted to Google employees to pursue higher education based on merit.• Teaching Excellence Award, UIUC, fall 2011.• Awarded Founders Award at Google in 2007 for contribution to Gmail.• Best Graduating Student Award, College of Engineering Trivandrum, 2006.	
WORK EXPERIENCE	Summer Intern at LLNL May 2013 - Aug 2013 <i>Lawrence Livermore National Lab</i>	
	Research Assistant at UIUC Dec 2011 - Present <i>Member of PPL under the guidance of Prof. Kale</i>	
	Internship at Google - Mountain View May 2011 - Aug 2011 <i>Software Engineer Intern; Member of Map Reduce team</i>	
	Teaching Assistant at UIUC Aug 2010 - Dec 2011 <i>Course: Data Structures</i>	
	Google - Hyderabad May 2006 - Aug 2010	
PUBLICATIONS	Harshitha Menon, Lukasz Wesolowski, Gengbin Zheng, Pritish Jetley, Laxmikant Kale, Thomas Quinn, Fabio Governato Adaptive Techniques for Clustered N-Body Cosmological Simulations [Computational Astrophysics and Cosmology 2015]	

*A Bastidas Fry, F Governato, A Pontzen, T Quinn, M Tremmel, L Anderson, **H Menon**, AM Brooks, J Wadsley*

All about baryons: revisiting SIDM predictions at small halo masses [Monthly Notices of the Royal Astronomical Society 2015]

*Acun, Abhishek Gupta, Nikhil Jain, Akhil Langer, **Harshitha Menon**, Eric Mikida, Xiang Ni, Michael Robson, Yanhua Sun, Ehsan Toton, Lukasz Wesolowski and Laxmikant Kale* (All authors have equal contribution)

Parallel Programming with Migratable Objects: Charm++ in Practice [SC14]

*Jonathan Lifflander, Esteban Meneses, **Harshitha Menon**, Phil Miller, Sriram Krishnamoorthy, Laxmikant Kale* Scalable Replay with Partial-Order Dependencies for Message-Logging Fault Tolerance [Cluster 2014]

Best Student Paper

***Harshitha Menon**, Laxmikant V. Kale*

A Distributed Dynamic Load Balancer for Iterative Applications [SC 2013]

Best Student Paper finalist

***Harshitha Menon**, Bilge Acun, Simon Garcia De Gonzalo, Osman Sarood and Laxmikant Kale*

Thermal Aware Automated Load Balancing for HPC Applications [Cluster 2013]

***Harshitha Menon**, Nikhil Jain, Gengbin Zheng and Laxmikant V. Kale*

Automated Load Balancing Invocation based on Application Characteristics [Cluster 2012]

*Bilge Acun, Akhil Langer, Esteban Meneses, **Harshitha Menon**, Osman Sarood, Ehsan Toton, Laxmikant V. Kale*

Power, Reliability, Performance: One System to Rule Them All [Under submission for IEEE Computer 2016]

***Harshitha Menon**, Abhinav Bhatele, Sebastien Fourestier, Francois Pellegrini and Laxmikant Kale*

Applying Graph Partitioning Methods in Measurement-based Dynamic Load Balancing [Technical report]

PROJECTS & RESEARCH

Epidemic Algorithm for Distributed Load Balancing [SC 2013]

- A distributed randomized algorithm for dynamic load balancing which uses gossip protocol for information propagation.
- Have shown scaling to 131K cores of BlueGene/Q for AMR mini-application.

Intra-node load balancing for HPC applications

- Vast amounts of on-node parallelism is available in many systems. Therefore, load imbalance occurring at the node level can be mitigated within the node instead of performing expensive global load balancing.
- I work on developing dynamic intra and inter node load balancing with the support of an adaptive runtime system.

Adaptive Techniques for Clustered N-Body Cosmological Simulations [Computational Astrophysics and Cosmology 2015]

- Addressed many challenges in scaling ChaNGa, n-body simulation code written in Charm++ which enabled it to scale to 512K cores of Blue Waters.
- Implemented scalable load balancing strategy and adaptive techniques to improve performance.

Automated Load Balancing based on Application Characteristics [Cluster 2012]

Master thesis with Prof.Kale

- An automated framework which takes decisions regarding load balancing for an application.
- The framework instruments multiple characteristics of an application like computation time, communication pattern; and selects an ideal load balancing strategy to be used for it.
- Decisions related to how frequently and when load redistribution needs to be done are taken by the framework; best decisions can be made with minimal efforts from end users.

- Feature in Charm++ production release.

Thermal Aware Automated Load Balancing [Cluster 2013]

- An adaptive control system that minimizes the cooling energy by using Dynamic Voltage and Frequency Scaling to control the temperature.
- The framework also detects load imbalance created by DVFS and performs automatic load balancing.

Chizu: A Framework to Enable Topology Aware Task Mapping

Summer intern project at Lawrence Livermore National Lab

- Topology aware mapping can improve the performance of a parallel application significantly.
- Was one of the developers of Chizu, a generic framework that facilitates topology aware mapping of tasks.
- Used Scotch graph partitioner to perform mapping.

Automated Distributed Configuration Manager for MapReduce

Summer intern project at Google with Dr Ken Goldman

- Implemented a distributed configuration manager for mapreduce worker formerly done manually by hit and miss trials.
- The manager adaptively configures the workers based on information shared between the workers using gossip protocol to obtain optimal performance.

Load Balancing using Graph Partitioning

- Implemented dynamic load balancing strategies using Scotch and Zoltan graph partitioners in Charm++.
- Implemented various graph based load balancing strategies for refinement of load.

Job Execution Management system

Work project at Google

- Redesigned the existing job management system for scheduling, distributing and managing test binaries across multiple platforms.
- Enabled scalability, replication across data centers, dynamic load management and recovery on failure.
- Implemented an automated solution to monitor the health of the service.
- Used bigtable, GFS and other Google technologies for underlying infrastructure.

PROFESSIONAL & COMMUNITY

- One among the 20 PhD candidates chosen to attend Women In Research Lean In event at facebook, 2016.
- Reviewing: TPDS, Concurrency and Computation: Practice and Experience, CiSE
- Panelist in HPC for undergraduate program at SC-13.
- Held Charm++ tutorial along with two other students at the 2014 Charm Workshop
- Guest speaker at RIT Engineering College. Gave a talk on Android platform.
- Held Robotics workshop at Google for Google Women in Engineering Award finalists.
- Mentor for nooglers; Test certified mentor - helps improve the testing practices at Google.
- Presented multiple sessions on robotics and parallel computing for high school students.