

NAVEEN KUMAR SHARMA

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EDUCATION	University of Washington Ph.D. in Computer Science & Engineering Advisors: <i>Arvind Krishnamurthy and Dan R. K. Ports</i>	Seattle, WA
	University of Washington M.S. in Computer Science & Engineering Advisors: <i>Steven D. Gribble and Dan R. K. Ports</i>	Seattle, WA June 2014
	Indian Institute of Technology, Kharagpur M.Tech in Computer Science & Engineering Advisors: <i>Niloy Ganguly</i>	Kharagpur, India May 2012
	Indian Institute of Technology, Kharagpur B.Tech (Hons.) in Computer Science & Engineering	Kharagpur, India May 2011
INTERESTS	Distributed Systems, Networks and Low-latency Datacenter Applications	
RESEARCH PROJECTS	Network Resource Allocation using Flexible Packet Processing Recent switch hardware proposals make it feasible to perform flexible packet processing inside the network. This allows operators to configure switches to parse and process custom packets headers using flexible match+action tables. As a result we have more insight into and control over how packets are processed and routed. We explore key design principles and use them to tackle the network resource allocation problem within data centers.	
	Predictable Tail-Latency Systems Modern datacenter applications struggle with the need to access thousands of servers while still providing a fast response time. In these situations, the user's overall request is not complete until the slowest sub-request has completed, making it important to design network services that offer not just low latency but predictable latency. We are developing techniques for building systems that offer predictable response time.	
	High-Performance Transactional Storage Transactional Application Protocol for Inconsistent Replication, or TAPIR, is a new protocol for linearizable distributed transaction built using replication with no consistency guarantees. By eliminating consistency, and thus coordination, from the replication layer, TAPIR can commit transactions in a single round trip and eliminates bottleneck at the Paxos leader.	
CONFERENCE PUBLICATIONS	Naveen Kr. Sharma , Ming Liu, Kishore Atreya and Arvind Krishnamurthy, <i>Approximating Fair Queueing on Reconfigurable Switches</i> . Proceedings of the USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2018.	
	Ellis Michael, Dan R. K. Ports, Naveen Kr. Sharma and Adriana Szekeres, <i>Recovering Shared Objects Without Stable Storage</i> . Proceedings of the International Symposium on Distributed Computing (DISC), 2017.	
	Naveen Kr. Sharma , Antoine Kaufmann, Thomas Anderson, Changhoon Kim, Arvind Krishnamurthy, Jacob Nelson and Simon Peter, <i>Evaluating the Power of Flexible Packet Processing for Network Resource Allocation</i> . Proceedings of the USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2017.	
	Jialin Li, Ellis Michael, Naveen Kr. Sharma , Adriana Szekeres and Dan R. K. Ports, <i>Just Say NO to Paxos Overhead: Replacing Consensus with Network Ordering</i> . Proceedings of the USENIX Symposium on Operating Systems Design and Implementation (OSDI), 2016.	
	Antoine Kaufmann, Simon Peter, Naveen Kr. Sharma , Thomas Anderson and Arvind Krishnamurthy, <i>High Performance Packet Processing with FlexNIC</i> . Proceedings of International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2016.	

Irene Zhang, **Naveen Kr. Sharma**, Adriana Szekeres, Arvind Krishnamurthy and Dan R. K. Ports, *Building Consistent Transactions with Inconsistent Replication*. Proceedings of the ACM Symposium on Operating Systems Principles (SOSP), 2015.

Dan R. K. Ports, Jialin Li, Vincent Liu, **Naveen Kr. Sharma** and Arvind Krishnamurthy, *Designing Distributed Systems Using Approximate Synchrony in Data Center Networks*. Proceedings of the USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2015. (**Best Paper Award**)

Jialin Li, **Naveen Kr. Sharma**, Dan R. K. Ports, Steven D. Gribble, *Tales of the Tail: Hardware, OS, and Application-level Sources of Tail Latency*. Proceedings of the Symposium on Cloud Computing (SOCC), 2014.

Saptarshi Ghosh, Muhammad Bilal Zafar, Parantapa Bhattacharya, **Naveen Sharma**, Niloy Ganguly, and Krishna P. Gummadi, *On Sampling the Wisdom of Crowds: Random vs. Expert Sampling of the Twitter Stream*. Proceedings of the International Conference on Information and Knowledge Management (CIKM), 2013.

Saptarshi Ghosh, **Naveen Sharma**, Fabricio Benevenuto, Niloy Ganguly and Krishna P. Gummadi, *Cognos: Crowdsourcing Search for Topic Experts in Microblogs*. Proceedings of the ACM SIGIR Conference, 2012.

Saptarshi Ghosh, Bimal Viswanath, Farshad Kooti, **Naveen Sharma**, Gautam Korlam, Fabricio Benevenuto, Niloy Ganguly and Krishna P. Gummadi, *Understanding and Combating Link Farming in the Twitter Social Network*. Proceedings of the World Wide Web Conference (WWW), 2012.

Saptarshi Ghosh, Avishek Banerjee, **Naveen Sharma**, Sanket Agarwal, Animesh Mukherjee and Niloy Ganguly, *Structure and Evolution of the Indian Railway Network*. Proceedings of the Summer Solstice International Conference on Discrete Models of Complex Systems, 2010.

Gautam Kumar, **Naveen Kumar Sharma** and Partha Bhowmick, *Creating Wheel-thrown Potteries in Digital Space*. Proceedings of International Conference on Arts and Technology (ArtsIT), 2009.

WORKSHOP
PUBLICATIONS

Naveen Sharma, Saptarshi Ghosh, Fabricio Benevenuto, Niloy Ganguly and Krishna P. Gummadi, *Inferring Who-is-Who in the Twitter Social Network*. Proceedings of the Workshop on Online Social Networks (WOSN), 2012.

Joydeep Chandra, Sascha Delitzscher, Niloy Ganguly, Ashish Jhunjhunwala, Tyll Krueger and **Naveen Sharma**, *Optimizing Topology in BitTorrent Based Networks*. Proceedings of the IEEE INFOCOMM Workshop on Network Science for Communication Networks (NetSciCom), 2011.

Shaun A. Forth and **Naveen Kr. Sharma**, *A sparse matrix approach to reverse mode automatic differentiation in MATLAB*. Proceedings of the ICCS Workshop on Automated Program Generation for Computational Science, 2010.

AWARDS

NSDI Best Paper Award	2015
Computer Science and Engineering Research Fellowship, University of Washington	2012
Best Masters Thesis , Computer Science & Engineering Department, IIT Kharagpur	2012
Max Planck Institute for Software Systems - Summer Intern Fellowship	2011, 2012
Winners of Hack-U organised by Yahoo! at IIT Kharagpur	2011
MITACS Globalink Scholar at University of Toronto, Canada	2010
Certificate of Merit in National Physics & Chemistry Olympiad (top 1% of all candidates)	2007
Certificate of Merit in <i>Science and Technology</i> for being placed among top 0.1% in AISSE	2005
National Talent Search Examination (NTSE) Scholar	2005
All India Second Runner-Up in Green Olympiad	2004

WORK
EXPERIENCE

Cavium, Inc. Software Research Intern	San Jose, CA Jun - Sep 2017
Google, Inc. Software Engineering Intern	Kirkland, WA Jun - Sep 2013
Max Planck Institute for Software Systems	Saarbrücken, Germany

Research Intern, Networked Systems Group
University of Toronto
Research Intern, Department of Computer Science
Cranfield University
Research Intern, Applied Mathematics & Scientific Computing

May - August 2011
Ontario, Canada
May - July 2010
Shrivenham, UK
May - July 2009

TEACHING
EXPERIENCE

Graduate Systems (CSE550) Fall 2015
Teaching Assistant, CSE, University of Washington
PMP Operating Systems (CSEP551) Fall 2014
Teaching Assistant, CSE, University of Washington
Operating Systems (CS30002) Spring 2012
Teaching Assistant, CSE, IIT Kharagpur
Computer Networks (CS40001) Fall 2011
Teaching Assistant, CSE, IIT Kharagpur