Aditya Sundarrajan

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Research Interests	Content caching, green computing, Anycast networking, content delivery networks (CDNs), Internet-scale distributed systems

Education

University of Massachusetts Amherst, Ph.D. Computer Science, 2018 (anticipated)
Thesis: Efficient caching and request routing for content delivery
Advisor: Dr. Ramesh Sitaraman

University of Arizona, M.S. Electrical and Computer Engineering, 2013
Thesis: Fast rerouting from single link and single node failures for IP multicast
Advisor: Dr. Srinivasan Ramasubramanian

SSN College of Engineering, Anna University, B.E. Electronics and Communication Engineering, 2010
Thesis: Effective routing protocol for MPEG-4 video transmission in multi-hop MANETs
Advisor: Dr. M. Ramakrishnan

Research

Cache optimization for content delivery, 2016 - present
Designing caching algorithms to jointly maximize cache hit rates and optimize server load balancing in CDNs

Efficient request routing for content delivery, 2016 - present
Developing Anycast-based mapping algorithms that work alongside DNS-based and end-user mapping algorithms to optimize request routing in CDNs

Sustainable cache deployment in CDNs, 2015 - present
Optimizing deployment of hybrid (SSD + spinning disk) servers to maximize server utilization while minimizing deployment cost to deliver heterogeneous content

Disk shutdown to reduce energy consumption in CDNs, 2014 - 2016
Developed energy-efficient cache management algorithms that minimize energy consumption using disk shutdown while maximizing end-user performance

Fast rerouting from single link and single node failures for IP multicast, 2011 - 2013
Developed a fast rerouting algorithm using Steiner trees to recover from node failures immediately. Integrated the above proposal with existing unicast link rerouting mechanisms to provide protocol independent single link and single node fast rerouting.

Energy efficient routing protocol for MPEG-4 video transmission in multi-hop mobile ad hoc networks, 2009 - 2010
Analyzed the performance of existing routing protocols to transmit video traffic over MANETs using real video traces. Identified the most efficient protocol to transmit video, and proposed extensions to improve throughput.

Work Experience	**Akamai Technologies**, Performance Engineering Intern, Summer 2016

Akamai Technologies, Performance Engineering Intern, Summer 2016
Analyzed and tested new Anycast-based mapping approaches for content delivery in CDNs

Akamai Technologies, Systems Software Engineering Intern, Summer 2015
Developed and evaluated caching algorithms that optimize the use of SSDs and spinning disks in hybrid servers deployed across the edge network

Akamai Technologies, Systems Software Engineering Intern, Summer 2014
Developed and evaluated disk shutdown algorithms that maximize cache hit rate while minimizing energy consumption of the CDN

Publications

Aditya Sundarrajan, Mangesh Kasbekar and Ramesh K. Sitaraman "Energy-efficient disk caching for content delivery", ACM e-Energy 2016

Aditya Sundarrajan and Srinivasan Ramasubramanian, "Fast reroute from single link and single node failures for IP multicast", in Computer Networks: The International Journal of Computer and Telecommunications Networking, Volume 82 Issue C, May 2015

Aditya Sundarrajan and Srinivasan Ramasubramanian, "Fast rerouting for IP multicast under single node failures", IEEE GLOBECOM 2013