Ashok Anand

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Objective: To obtain a summer internship in the area of Networks and Systems.

Academic Details:

- **University of Wisconsin, Madison**
  PhD in Computer Science (since Fall 2007), GPA-4.0/4.0
- **Indian Institute of Technology, Kharagpur, India**
  B Tech in Computer Science, 2003, CGPA-9.13/10.0, Department Rank 8/55

Work Experience:

- **Research Assistant** with *Prof. Aditya Akella*. Jan 2008-present.
- **IBM India Research Lab, New Delhi, India:** *Technical Staff Member,* June 2003-June 2007
- **INRIA Research Lab, Lorraine, France:** *Summer Internship* (May 2002-June 2002)

Publications:

- Packet Caches on Routers: The Implications of Universal Redundant Traffic Elimination**,** *Submitted to* **SIGCOMM 2008.**
- An Open Framework for federating integrated management model of Distributed IT Environment**.** *To appear in* **NOMS 2008.**
- General Store placement in Parallel Disks, **JPDC 2007(Journal of Parallel and Distributed Computing)**.
- On Store Placement for Response Time Minimization in Parallel Disks, **ICDCS 2006**
- Next Gen Extreme Porting: Structured by Automation: **SAC 2005 (Symposium on Applied Computing).**
- A Framework and Tool for Porting Assessment and Remediation: **ICSM 2004 (International Conference on Software Maintenance).**

Patents: Here are the patents filed during my research work in IBM.

Prevention of Deadlock in Distributed SOA Computing Environment (Filed on 29th Nov 2007), System and Method for placement of logical data stores to minimize response time (13th Jan 2007), System and Method for interactive and assisted program development (Filed 12th April, 2006), Software Migration Orchestration (6th July 2005), System and Method for Managing Error Dependencies (18th Jan 2005).

Research Projects: Here are descriptions of few of my research projects.

Redundancy aware Routing: In this project, we explore the benefits of deploying packet-level redundant content elimination as a universal service on all Internet routers. We show that such a deployment can enable novel intra- and inter-domain traffic engineering schemes. We develop redundancy-aware routing algorithms which can reduce the network-wide intra- and inter-domain link loads by further 10-25% compared to hop-by-hop redundancy elimination on shortest path routes. We also address the key challenges that may hinder implementation of redundancy elimination on fast routers. Our current software router implementation (based on Click) can run at 1 Gbps on 1.8 GHz Linux box.

Fast Log Writes Using Disk Mimic: In this project, we investigate a suite of algorithms for reducing the overhead of small synchronous writes by predicting the position of disk head. Existing algorithms are either memory inefficient or bad in prediction. We design memory-efficient algorithms which can predict the disk head position with-in a configurable accuracy limit. Finally, we design and implement a pseudo driver for Linux based systems, which can be integrated with the existing Linux based journaling file systems.

IQuilt: In this project, we explore how different meta-models of various development artifacts (e.g. web services) and runtime artifacts (e.g. web container) can be stitched together to give an integrated model. We show how this integrated model can be used for predicting performance, problem determination and impact analysis of composite SOA (service oriented architecture) applications.

Store Placement: In this project, we show the sub-optimality of existing naïve load-balancing based approaches for data-store placement in the parallel disks. We design algorithms which take into account non-work conservative nature of disk requests and C-LOOK scheduling policies, and outperform the existing approaches by more than a factor of 2 under heterogeneous workload scenarios.

Computer Skills

Languages: C/C++, Java, Perl, XML, Prolog, BPEL, UML, Lex
Tools and Packages: Eclipse, Click, Websphere Integration Developer, Prolog, ABLE

Honors

All India Rank 186, (TOP 0.15%) in Indian Institute of Technology, Joint Entrance Examination, out of approx. 1,25,000 candidates appeared.

IBM Research Division Technical Group Award, IBM Bravo Award and IBM Research Invention Achievement Award

References

Prof. Aditya Akella, University of Wisconsin Madison,
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Prof. Remzi H. Arpaci-Dusseau, University of Wisconsin, Madison,
Email: remzi@cs.wisc.edu