

## George Kola

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**Career Objective** A position in industry or research lab that involves systems design, performance analysis, systems development and/or performance modeling.

**Visa Status** F1

**Education**

<b>PhD, Computer Science</b> University of Wisconsin Madison	Expected Dec 2007
<b>M.S, Computer Science (GPA: 3.93/4)</b> University of Wisconsin Madison	2003
<b>B.E, Computer Science and Engineering (Top 5 of class)</b> College of Engineering Guindy, Chennai, India	2001

### Relevant Experience

**Graduate Research Assistant under Prof. Mary Vernon** 2004 to present  
PhD Dissertation Title: "*Design, Implementation, Evaluation and Performance Engineering of High Performance Network Transport Protocols*"

- Designed, implemented and performance engineered TCP-Madison, an end host based transport protocol that achieves
  - high bandwidth utilization (>90%)
  - negligible loss (<10<sup>-5</sup>, typically 0)
  - low average backlog (<10 packets)
  - fair bandwidth sharing irrespective of RTT
- Designed, developed and deployed (on PlanetLab) an user-level platform for network transport protocol evaluation  
Protocols implemented: TCP-Madison, FAST TCP, BIC TCP, TCP Africa, TCP Reno
- Developed 'QuickProbe' a rapid available-bandwidth estimation algorithm and tool

**Graduate Research Assistant in the Condor Project** 2001 to 2004

- Designed, developed and deployed 'DiskRouter', an application level overlay network where nodes use the available disk space to maximize the throughput of data transfers. Highlights:
  - Deployed at 8 organizations/sites
  - Supports optical switching
  - Used to move 100's of terabytes of real-world scientific data
  - Up to 3-times speedup in end-to-end data set transfer time
- Designed solution for end-to-end processing of data intensive applications (astronomy image processing, educational research video processing) that enabled scientists to accomplish their processing in a fraction (< 1/5) of the original time in a fully automated manner.
- Work resulted in a book chapter, a journal papers, 9 refereed conference and workshop papers and 2 technical reports.

- Characterized the middle tier (Enterprise Java bean) of the 3-tier web workload
- Analyzed and characterized ECPERF which later became SPECJBB
- Feedback to the product group including bug identification and performance enhancement suggestions.

## **Skills**

- **Programming Languages:** C, C++, Java, bash scripting, awk
- Knowledge of Linux kernel internals, network protocols implementation
- Experience with profiling servers/applications using CPU performance counters

## **Graduate Courses**

- Advanced Operating System, Distributed Systems, Advanced Computer Networks
- Topics in Database Management Systems
- Advanced Computer Architecture I & II
- Construction of compilers

## **Selected Publications**

- G. Kola and M. K. Vernon, "Target Bandwidth Sharing Using Endhost Measures." In *Performance 2007*, Oct 2007
- G. Kola and M. K. Vernon "QuickProbe: Available Bandwidth Estimation in Two Roundtrips." *ACM SIGMETRICS 2006/Performance 2006*, June 2006
- G. Kola, T. Kosar and M. Livny, "Faults in Large Distributed Systems and What We Can Do About Them", In Euro-Par 2005, August 2005
- G.Kola, Tevfik Kosar, J. Frey, M. Livny, R. J. Brunner and M. Remijan, "DISC: A System for Distributed Data Intensive Scientific Computing", In *Proceedings of the First Workshop on Real, Large Distributed Systems (WORLDS'04)*, in conjunction with OSDI'04, Dec 2004
- G. Kola, T. Kosar and M. Livny, "Profiling Grid Data Transfer Protocols and Servers", In *Euro-Par 2004*, August 2004
- G. Kola, T. Kosar and M. Livny, "A Fully Automated Fault-tolerant System for Distributed Video Processing and Off-site Replication", In the *14th ACM International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV 2004)*, June 2004.

## **Achievements**

- Awarded best technical cadet Gold medal by National Cadet Corps Naval Division (India)
- Secured District first and a state rank (6 out of 100,000+) in Tamil Nadu Professional Entrance Examinations.