

# Mukundan V. Iyengar

## School Address

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## Objective

I look forward to a postdoc position starting Summer 2011. I am broadly interested in future Internet architectures and distributed systems.

## Education

- Ph.D. Candidate  
*Fall 2006 – Summer 2011 (expected)*  
**Thesis title:** *Towards an Internet for Interactive Multimedia*  
Faculty of Computer Engineering, Dept. of EECS, University of Central Florida, USA.
- Bachelor of Engineering (B.E.)  
*July 1999 – June 2003*  
Computer Science and Engineering  
Visweswaraiiah Technological University, Karnataka, India.

## Research Interests

- *Systems* aspect of deploying large-scale overlays on the Internet
- *Multimedia Social Network* involving IPTV, VoD, 3D, tele-immersion, online multiplayer games etc.
- *Expertise* in gathering and analyzing large-scale Internet measurements to optimize multimedia traffic.
- *PhD thesis* provides the first quantification of Internet degradations on video-QoE, as well as protocols to improve them.
- *Current project* called “*PeopleNet*” significantly improves Internet path selection for multimedia traffic.

## Skills

- *Platforms:* Linux, FreeBSD, PlanetLab, TinyOS 1.x/2.0, SA Set Top Boxes, Windows
- *Languages:* C, C++, Java, nesC, 80x86 asm, Tcl/Tk, Python, Ruby, Shell Scripts, PL/SQL, etc.
- *Tools:* ns-2, libpcap, LaTeX, Matlab, Oracle, Apache/Helix/gnump3d server (code hacking)

## Honors and Awards

- Presidential Doctoral Fellowship recipient at University of Central Florida for pursuing my Ph.D. degree. Awarded to the top 4 incoming graduate students across all disciplines in UCF every Fall for an intake of more than 1500 students.
- Best PhD work-in-progress (Runner up), IEEE WoWMoM, Greece 2009
- Travel Grants: NSF grant for IEEE WoWMoM 2009, and ACM Multimedia travel grant 2010.
- Best Student Paper Award 2003, Asia Pacific, *IEEE Region 10 Student Paper Contest* (adjudged one out of 2000+ entries). Awarded by IEEE Headquarters, NY, USA. Oct 2003.
- Best Student Paper Award, (B. R. V. Varadhan Award) IEEE 11th Annual Symposium on System on a Chip, (IISc) Bangalore, Nov 2002
- Award Paper, (B. R. V. Varadhan) IEEE 12th Annual Symposium on Mobile Computing and Applications, Bangalore, Nov03.
- Significant Disclosure of the Quarter, Conferred by the Intellectual Property (IP) Cell of Infosys Tech Ltd, for a patent filed on sensor networks in Apr-June 2006.
- University top scores in Junior Thesis (June 2002) and Senior Thesis (June 2003) of my undergrad.

## Related Experience

*Summer Intern*, Attila Tech.  
Hoboken, NJ.

05/2010 – 08/2010

Worked on Attila’s unique multiple network transport protocol that simultaneously uses multiple network interfaces to transfer data. Performed extensive data collection and analysis on their testbed to propose new bandwidth estimation algorithms, which improve stability and throughput.

Summer Intern, C-Cor Inc.  
Beaverton, OR.

05/2007 – 08/2007

I was a summer intern at C-Cor, and built a system to infer in real-time the health of an access network in terms of video QoE. I also performed various development related tasks. Work here resulted in three papers.

Member of Research Staff, SET-Labs, Infosys  
Bangalore, India.

02/2004 – 06/2006

Worked 2+ years at Infosys research wing, Software Engineering and Technology (SET) Labs. Work focused on resource discovery in distributed networks (IRIS) and reconfigurable stacks for wireless sensor networks. Work resulted in developed products that were sold to Fortune 500 clients, three publications and two patents (one international).

Research Assistant, SERC, IISc  
Bangalore, India.

08/2003 – 01/2004

Worked at SERC, IISc in the areas of mobile systems (wireless ad hoc networks). Work resulted in three published papers (including one award student paper and one invited paper).

### Patents

- Mukundan Venkataraman, Kartik Muralidharan and Puneet Gupta, *Dynamic Stack Based Networks for Resource Constrained Devices*, U. S. Patent Application No. 11/906,141, filed Sept 2007.

### Book Chapter

- M. Venkataraman, M. Chatterjee and K. Kwiat, *Dynamic Routing Framework for Wireless Sensor Networks*, In Sustainable Wireless Networks, InTech Publishers Jan 2011.

### Journals/Magazines

1. M. Venkataraman and M. Chatterjee, *Quantifying Video-QoE degradations of Internet Links*, IEEE/ACM Trans. on Networking, Feb 2011 (revision submitted).
2. M. Venkataraman and M. Chatterjee, *Effects of Internet Path Selection on Video-QoE: Analysis and Improvements*, IEEE/ACM Trans. on Networking (under review).
3. M. Venkataraman and M. Chatterjee, *MintMOS: Lightweight, Real-Time, no-reference Video-QoE Inference*, IEEE Trans. on Multimedia, March 2011 (under review).
4. M. Venkataraman, M. Chatterjee, and K. Kwiat, *A Dynamic Reconfigurable Routing Framework for Wireless Sensor Networks*, Elsevier Ad-Hoc Networks (to appear).
5. M. Venkataraman, S. Sengupta, M. Chatterjee and R. Neogi, *Designing a Collector Overlay Architecture for Fault Diagnosis in Video Networks*, Elsevier Computer Communications (to appear).
6. M. Venkataraman and M. Chatterjee, *Inferring Video-QoE in Real Time*, IEEE Network, Vol. 25 (1), pp. 4 – 13, January 2011.

### Conference Publications

1. M. Venkataraman and M. Chatterjee, *Internet for Interactive Multimedia*, ACM NOSSDAV, Vancouver, Canada. July 2011. (submitted)
2. S. Debroy, M. Venkataraman and M. Chatterjee, *Critical Sections in Online FPS Games*, ACM NOSSDAV, Vancouver, Canada. July 2011. (submitted)
3. M. Venkataraman and M. Chatterjee, *Effects of Internet Path Selection on Video-QoE*, ACM Multimedia Systems (MMSys), San Jose, CA. Feb 2011.
4. M. Venkataraman and M. Chatterjee, *Case Study of Internet Links: What Degrades Video-QoE?*, IEEE Globecom, Miami, FL, Dec. 2011.
5. M. Venkataraman, M. Chatterjee and S. Chattopadhyay, *Evaluating QoE for Streaming Video in Real Time*, IEEE Globecom, Honolulu, Hawaii. Nov 2009.
6. M. Venkataraman and M. Chatterjee, *Inferring and Improving Perceptual Quality of Internet Video*, PhD Work-in-Progress, IEEE WoWMoM, Kos, Greece. June 2009.  
(Runners up for *Best Dissertation Proposal*)
7. M. Venkataraman, M. Chatterjee and K. Kwiat, *Traffic Based Dynamic Routing for Wireless Sensor Networks*, IEEE WCNC, Budapest, Hungary. April 2009

8. M. Venkataraman, S. Sengupta, M. Chatterjee and R. Neogi, *Collector Overlay Architecture for Fault Diagnosis in Access Networks*, IEEE CCNC, Las Vegas, NV. Jan 2009.
9. M. Venkataraman and M. Chatterjee, *An Overlay Architecture for Fault Diagnosis in Video Delivery Networks*, IEEE ANTS, Mumbai, India. Dec. 2008.
10. M. Venkataraman, M. Chatterjee and K. Kwiat, *An Application Specific Routing Framework for Wireless Sensor Networks*, IFIP WCIDT, Pretoria, South Africa. Oct. 2008.
11. M. Venkataraman, S. Sengupta, M. Chatterjee and R. Neogi, *Resource Management Considerations in Collector Overlay Networks*, IEEE ICNS, Gosier, Guadeloupe. March 2008.
12. M. Venkataraman, S. Sengupta, M. Chatterjee and R. Neogi, *Towards a Video QoE Definition in Converged Networks*, IEEE ICDT, Silicon Valley, CA. June 2007.
13. M. Venkataraman, P. Gupta, M. Chatterjee and K. Muralidharan, *IRIS: Design and Implementation of an Intentional Resource Indicator Service*, IEEE WiMob, White Plains, NY. Oct. 2007.
14. M. Venkataraman, K. Muralidharan and Puneet Gupta, *Designing New Architectures and Protocols for Wireless Sensor Networks: A Perspective*, IEEE SECON, Santa Clara, CA. Sept. 2005.
15. M. Venkataraman and R Bhakthavathsalam, *Proximate Runner Protocol for Wireless Mobile Ad hoc Networks*, SCS/ACM/IEEE CNDS, San Diego, CA. Jan 2004.
16. M. Venkataraman and P. Gupta, *Stack Aware Architectures for Mobile Ad hoc Networks*, IETF Internet Draft, May 2004.
17. M. Venkataraman, *TCP Friendly Congestion Control for Real Time Streams*, IEEE Region-10 Student Paper Contest Contender, Oct. 2003.  
*Best Student Paper Award*
18. M. Venkataraman, *On a TCP-Friendly Linear Congestion Control Algorithm for Real Time Streaming Applications*, IEEE 11th Annual Symposium on System on a Chip, Bangalore, India. Nov 2002.  
*Best Student Paper Award*

### Professional Involvement

- Student member of IEEE and ACM
- Reviewer for many conferences and journals such as: *IEEE Infocom* 2010 and 2011, *ACM Multimedia MoViD Workshop* 2010, *IEEE Trans. on Multimedia* 2009, *Elsevier Computer Communications* 2010, *IEEE WONS* 2010, *IEEE ICDCN* 2009, and *IEEE Percom* 2007.
- Web-Chair for *ACM Multimedia MoViD Workshop*
- Vice-Chair of Innovation Club at UCF (2009), that provides a liason between venture capitalists and research labs.

### Hobbies

I am (also) a professional photographer. A lot of my artwork has featured on the UCF homepage, brochures and travel-magazines. Time permitting, I also do event-photography/portfolio building (Trade-For-Print, or TF\* photoshoots).

### References

- Prof. Mainak Chatterjee  
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- Dr. Kevin Kwiat  
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- Prof. Ratan K. Guha  
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