

Vijay Gabale

CONTACT INFORMATION

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RESEARCH INTERESTS

I am interested in research problems which have either or both of the following goals:

- To build new designs, protocols, algorithms and theories that improve the performance of computer networks and systems
- To build networked-systems on novel ideas that improve the quality of human life.

I particularly get excited by the “scale” of the problems. I like to work on characterizations and optimizations of networks and systems, and network economics.

EDUCATION

- **August, 2009 – Present, Doctor of Philosophy (Ph.D.)**
Department of Computer Science and Engineering, IIT Bombay, Powai, Mumbai
Advisors: Prof. Bhaskaran Raman, Prof. Kameswari Chebrolu
Thesis Topic: To Build a Low Cost and Low Power Voice Technology for Use in Developing Regions
CPI: 8.5
- **August, 2007 – June, 2009, Master of Technology (M.Tech.)**
Department of Computer Science and Engineering, IIT Bombay, Powai, Mumbai
Advisors: Prof. Bhaskaran Raman, Prof. Kameswari Chebrolu
Thesis Topic: PIP-A Multi-Channel, TDMA-based MAC for Efficient and Scalable Bulk Transfer in Sensor Networks
CPI: 9.6 (Among Top Five Rankers in the Department)
- **August, 2003 – June, 2007, Bachelor of Engineering (B.E.)**
Department of Computer Science and Engineering,
Pune Institute of Computer Technology, Pune
Score: 76% (Among Top Ten Rankers in University of Pune)

HONORS AND AWARDS

- IEEE COMSNETS 2012 Award for Excellent Contribution In Conference Organization, Bangalore, India
- IBM PhD Fellowship Award for year 2011-2012
- ACM Sigcomm Geo-diversity Travel Grant Award to Attend SIGCOMM-2011 in Toronto, Canada
- Secured All India Rank 9 in GATE-2007 conducted by MHRD, GoI for post-graduate programs in IITs

EMPLOYMENT

- **Summer Intern**, IBM Research, India,
Topic: Optimization of Video Delivery from Cloud Data Centers
Mentor: Partha Dutta, May, 2011 – August, 2011
- **Teaching Assistant**, Department of Computer Science and Engineering, IIT Bombay, India,
Courses Assisted: Computer Networks (Prof. Kameswari Chebrolu), Wireless Networks (Prof. Bhaskaran Raman), Graph Theory (Prof. Abhiram Ranade), August, 2009 – April, 2011

PUBLICATIONS

Vijay Gabale, Partha Dutta, Ravi Kokku, Shivkumar Kalyanaraman, “InSite: QoE-aware Video Delivery From Cloud Data Centers”, 20th IEEE/ACM International Workshop on Quality of Service (IWQoS), Coimbra, Portugal, June 2012

Vijay Gabale, Bhaskaran Raman, Partha Dutta, Shivkumar Kalyanaraman, “A Classification Framework for Scheduling Algorithms in Wireless Mesh Networks”, IEEE Transactions on Communication Surveys and Tutorials (COMST), 2012

Vijay Gabale, Kameswari Chebrolu, Bhaskaran Raman, Sagar Bijwe, “PIP: A Multi-Channel, TDMA-based MAC for Efficient and Scalable Bulk Transfer in Sensor Networks”, ACM Transactions on Sensor Networks (TOSN), 2012

Vijay Gabale, Ramesh Gopalakrishnan, Bhaskaran Raman, “The Pilot Deployment of A Low Cost, Low Power Gateway To Extend Cellular Coverage In Developing Regions”, 5th ACM Workshop on Networked Systems for Developing Regions (NSDR), Washington D.C., U.S.A., June 2011

Vijay Gabale, Ashish Chiplunkar, Bhaskaran Raman, Partha Dutta, “DelayCheck: Scheduling Voice Over Multi-hop Multi-channel Wireless Mesh Network”, 3rd International Conference on Communication Systems and Networks (COMSNETS), Bangalore, India, Jan 2011

Vijay Gabale, Bhaskaran Raman, Kameswari Chebrolu, Purushottam Kulkarni, “LiT MAC: Addressing The Challenges of Effective Voice Communication in a Low Cost, Low Power Wireless Mesh Network”, 1st ACM Symposium on Computing for Development (DEV), London, U.K., Dec 2010

Bhaskaran Raman, Kameswari Chebrolu, Sagar Bijwe, **Vijay Gabale**, “PIP: A Connection-Oriented, Multi-Hop, Multi-Channel TDMA-based MAC for High Throughput Bulk Transfer”, 8th ACM Conference on Embedded Networked Sensor Systems (SENSYS), Zurich, Switzerland, Nov 2010, *Special mention among 4 papers fast-tracked to Transactions for Sensor Networks (TOSN)*

PAPERS IN SUBMISSION

Vijay Gabale, **Ashish Chiplunkar**, “Host-Bypass: Approximating Node-Weighted Connectivity Problems In Two-Tier Networks”, The 32nd IEEE International Conference on Computer Communications (INFOCOM 2013), Submitted in July, 2012.

Vijay Gabale, Partha Dutta, Ravi Kokku, Shivkumar Kalyanaraman, “InSite: QoE-aware Video Delivery From Cloud Data Centers”, IEEE/ACM Transactions on Networks (ToN), Submitted in June, 2012

Vijay Gabale, Jeet Patani, Rupesh Mehta, Ramakrishnan Kalyanaraman, Bhaskaran Raman, “Building A Low Cost Low Power Wireless Network To Enable Voice Communication In Developing Regions”, ACM SIGMOBILE Mobile Computing and Communications Review (MC2R), Submitted in May, 2012, *Invited Paper*

Vijay Gabale, Bhaskaran Raman, Kameswari Chebrolu, “A Generic TDMA MAC To Support Real-time Applications on Wireless Multi-hop Networks”, IEEE Transactions on Mobile Computing (TMC), Submitted in March, 2012

PAPERS IN PREPARATION

Jeet Patani, **Vijay Gabale**, Bhaskaran Raman, “Minimum Weight Multicast Scheduling in Multi-channel Wireless Mesh Networks for Real-time Applications”

Ravi Bhoraskar, **Vijay Gabale**, Purushottam Kulkarni, Dhananjay Kulkarni, “Importance-aware Bloom Filter for Set Membership Queries in Streaming Data”

CONFERENCE PRESENTATIONS	‘InSite: QoE-aware Video Delivery From Cloud Data Centers’, IWQoS’12, Coimbra, Portugal ‘Lo^3: Low Cost, Low Power, Local Voice for Developing Regions’, RUTAG’12, IIT Bombay, India ‘Lo^3: Low Cost, Low Power, Local Voice for Developing Regions’, Ph.D. forum, COMSNETS’12, Bangalore, India ‘LiT MAC: Addressing The Challenges of Effective Voice Communication in a Low Cost, Low Power Wireless Mesh Network’, Bharat Electronics Limited (BEL), Bangalore, India, 2011 ‘The Pilot Deployment of A Low Cost, Low Power Gateway To Extend Cellular Coverage In Developing Regions paper’, NSDR’11, Washington D.C., U.S.A. ‘DelayCheck: Scheduling Voice Over Multi-hop Multi-channel Wireless Mesh Network’, COMSNETS’11, Bangalore, India ‘LiT MAC: Addressing The Challenges of Effective Voice Communication in a Low Cost, Low Power Wireless Mesh Network’, DEV’10, London, U.K. ‘PIP: A Connection-Oriented, Multi-Hop, Multi-Channel TDMA-based MAC for High Throughput Bulk Transfer’, SenSys’10, Zurich, Switzerland
DEMOS	Vijay Gabale, Partha Dutta, Ravi Kokku, Malonan Chetlur, Shivkumar Kalyanaraman, “Video-watch In The Middle (VIM): Managing QoE of Video Flows Over TCP”, IEEE COMSNETS 2012, Bangalore, India Vijay Gabale, Jeet Patani, Bhaskaran Raman, Rupesh Mehta, Ramakrishnan Kalyanaraman, “A Dvaar To LokVaani: Extending Cellular Coverage Inside Villages of Developing World”, ACM WiTECH Workshop, (in conjunction with MobiCom 2012), Istanbul, Turkey. Vijay Gabale, Bhaskaran Raman, Kameswari Chebrolu, Purushottam Kulkarni, “LokVaani: Demonstrating Interactive Voice in Lo^3”, ACM SIGCOMM 2010, New Delhi, India
POSTERS	Vijay Gabale, Bhaskaran Raman, Kameswari Chebrolu, “Lo^3: Low Cost, Low Power, Local Voice and Messaging for Developing Regions”, Microsoft TechVista 2010, Bangalore, India
COMPUTER SKILLS	• Tools: TinyOS, Network Simulator 3, GNU Linear Programming Kit (GLPT) • Languages: C, C++, Java, Perl, Python, Unix shell scripts, $\text{\LaTeX}$
COURSES TAKEN	• Systems and Networks: Computer Networks, Wireless Networks, Quality of Service in Networks, Network Security, Optical Networks • Theory and Algorithms: Algorithms, Advanced Algorithms, Applied Algorithms, Graph Theory, Linear Optimization, Performance Analysis of Computer Networks and Systems, Probability and Statistics • Other: Data Mining, Applied Economics

PROFESSIONAL ACTIVITIES	Organizing Committee Member and Web Co-chair, COMSNETS 2013. Student representative, Dept. Comp. Sci. and Engg., Ph.D. research scholars, 2009-2012. Organizing Committee Member and Web Co-chair, COMSNETS 2012. Student representative, Dept. Comp. Sci. and Engg., class of M.Tech, 2008-2009. Journal Paper Reviewer: IEEE TMC, IEEE COMNET Conference Paper Reviewer: ACM DEV, IEEE SECON	
OTHER ACTIVITIES	Selected for and attended Microsoft Research, India summer school on “Computing for Socio-economic Development”, Bangalore, India, 2010 Ranked 2 nd in department programming competition, IIT Bombay, India, 2010 Selected for and attended ACM SIGCOMM conference, Toronto, Canada, 2011	
OTHER INTERESTS	Participation: Programming Contests, Treks (Himalayas, Sanhyadris) Reading: Astronomy and Physics, Science Fiction, Detective Stories Sports: Badminton, Cricket (Captain of Department Cricket Team), Gymming, Judo (Yellow belt) Art: Sketching, Painting, Amatuer Salsa Dancer	
REFERENCES	Prof. Bhaskaran Raman Department of Comp Sci Eng IIT Bombay, India <i>Voice:</i> +91-22-2576-7908 <i>E-mail:</i> br@cse.iitb.ac.in	Prof. Kameswari Chebrolu Department of Comp Sci Eng IIT Bombay, India <i>Voice:</i> +91-22-2576-7976 <i>E-mail:</i> chebrolu@cse.iitb.ac.in
	Prof. Anirudha Sahoo Department of Comp Sci Eng IIT Bombay, India <i>Voice:</i> +91-22-2576-7981 <i>E-mail:</i> sahooc@cse.iitb.ac.in	Partha Dutta Researcher, IBM Research Bangalore, India <i>Voice:</i> +91-80-28036749 <i>E-mail:</i> parthdutta@in.ibm.com