

CURRICULUM VITAE

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Research Interests

- Wireless Networks
- Delay Tolerant Networks
- Communications in disaster response

Academic Background

Examination/Degree	Institution	Year of Passing	Percentage/CGPA
PhD	Indian Institute of Technology Bombay	-	8.875/10
M.Tech. (CSE)	Indian Institute of Technology Kanpur	2007	9.43/10
Winter School on Soft Computing Tools, Simulation and Applications (WSSCTSA)	Center for Soft Computing Research, Indian Statistical Institute	10 th - 14 th January 2006	N/A
B.E. (CSE)	Maharashtra Institute of Technology, University of Pune	2004	64.93 %
Class XII	Gujarat State Board	2000	79.11 % (PCM)
Class X	Gujarat State Board	1998	74.43 %

PhD Dissertation

My PhD work involves study of how communication networks can be useful during disaster response activities. In particular, it focuses on communication needs of Search And Rescue Teams (SART) and Disaster Assessment and Response Teams (DART). These teams need to communicate among themselves as well as with their control room. The control room could be located on site or somewhere outside the affected region. The basic idea behind the communication network is to use long distance wi-fi links for communication. Line Of Sight (LOS) requirement for such links is achieved by using blimps (non-rigid balloon like aircrafts). With one node on a blimp and another node with a SART/DART member on site, LOS is achieved. The node on the blimp acts as an intermediate hop and forwards this data to a node that is present at the control room. Depending on the needs there could be multiple intermediate hops. Currently, only the idea has been chalked out. Proof of concept studies shall begin shortly after procuring blimp and wi-fi equipment.

Internship

I worked as an intern from the period of 10th May 2006 to 29th July 2006 at University of Waterloo, Canada under the guidance of Prof. S. Keshav. The work involved design of a scalable and robust routing algorithm for mechanical backhaul networks. Mechanical backhaul networks are a way of providing delay tolerant connectivity to rural regions of India in an economically feasible manner. Kiosks are present at villages, which serve as community service centers. These kiosks communicate wirelessly with mobile nodes present on buses of any such vehicle that come to the village and transfer the data they have. These buses/vehicles travel to towns where they transfer the data to a “gateway”. The gateway is connected to the Internet and can send the data of the kiosk to the Internet.

M.Tech Thesis

I continued the work I did during my internship for the MTech thesis under supervision of Prof. Bhaskaran Raman and with Prof S. Keshav as my co-guide. A first cut implementation of the scalable routing protocol for mechanical backhaul networks has been done. The protocol divides all the nodes in to logical “regions”. Designated “gateways” are responsible for communication across regions. They make use of globally accessible table. This table stores information regarding to which region a particular kiosk belongs. Within a region communication takes place through “smart flooding”. In intra-region routing a message is sent to all the nodes irrespective of the destination of the message. This dramatically simplifies the routing process and also provides very high delivery probability. The flooding process is called smart because it makes use of techniques like meta-data exchange and death certificates to control unnecessary transfer of messages.

Professional Experience

Company	From	To	Details
Persistent Systems Pvt. Ltd.	5 th July 2004	17 th December 2004	Worked primarily on development of website using client and server side javascript. Was also trained on .net technology.

Extra Curricular

- Attended workshop on Sphere Minimum Standards in Disaster Response conducted by Focus Humanitarian Assistance from 15th to 20th October 2007.
- Voluntary Member of Disaster Assessment and Response Team (DART) at Focus Humanitarian Assistance, India
- Volunteered as an English teacher for a weekend school run by IIT Kanpur faculty and students. The weekend school helped children going to Hindi medium schools to learn English and helped students with their regular studies.
- Taught spoken English as a part of the initiative by IIT Kanpur faculty and students to train graduate youth in English and computing skills.
- Volunteered for delivering tents and other necessities, arranged by Focus, from Ahmedabad to Bhuj after Gujarat earthquake.