
**CONTACT
INFORMATION**

Abhijeet Bhorkar
A1, 109, Padmaganga App.,
Ramdaspath,
Nagpur, Maharashtra 440010 E-mail: abhijeet.bhorkar@gmail.com

Research Interests Wireless resource allocation, scheduling, decision and control(stochastic optimization, dynamic programming, reenforcement learning, stochastic approximation), protocol design, analysis and simulation.

Education **Indian Institute of Technology Bombay**, Mumbai, India

- Dual Degree,
Electrical Engineering (expected graduation date: June 2006)
- M-tech: Tele-communication and signal processing
 - B-Tech: Electrical Engineering

Degree/Certificate	Board/Institute	CPI/ Percentage
Dual Degree (M-tech,B-Tech)	IIT Bombay	9.61/10,
Higher Secondary Certificate	Maharashtra state Educational Board	96%
Secondary School Certificate	Maharashtra state Educational Board	92%

**Honors and
Awards**

1. Ranked first in the batch of 20 students in Dual degree, Telecommunication and signal processing.
2. National Talent Search Examination scholarship(NTSE) 1998.
3. Institute Academic award,IIT Bombay 2003,2004.
4. 9th Merit position in Secondary School Certificate examination and Higher Secondary School Examination.

Publications

- Abhijeet Bhorkar , Abhay Karandikar , V.S. Borkar, "Opportunistic Power Optimal Scheduling"
Accepted at GlobComm 06
- Hemant Kumar Rath, Abhijeet Bhorkar, Vishal Sharma, "An Opportunistic DRR (O-DRR) Uplink Scheduling Scheme for IEEE 802.16-based Broadband Wireless Networks", IETE, International Conference on Next Generation Networks (ICNGN), February 9, 2006, Mumbai.
- Hemant Kumar Rath, Abhijeet Bhorkar, Vishal Sharma, "An Opportunistic Uplink Scheduling Scheme to Achieve Bandwidth Fairness and Delay for Multiclass Traffic in Wi-Max (IEEE 802.16) Broadband Wireless Networks", IEEE Globecom, 2006 (Accepted for Publication).
- Abhijeet Bhorkar , Abhay Karandikar , V.S. Borkar, "Power Optimal Scheduling: An analytical approach ", under preparation.
- Abhijeet Bhorkar , Abhay Karandikar, "Delay Optimal Scheduling Algorithm", under preparation.

Research Summary

1. Masters Thesis

Adviser: Prof Abhay Karandikar

Duration: July 04-Jun 06

Qos and Channel aware, energy efficient scheduling algorithms Broadband system. The work considers, devising energy efficient strategies in a multiuser environment with TDMA as multiple access. It particularly deals with,

- Opportunistic energy optimal scheduling with rate constraint.
- Opportunistic energy efficient scheduling with delay constraint.
- Fairness issues in scheduling.

Currently, I am considering energy efficient strategies for multiuser TDMA system with delay constraints. The problem is formulated as delay constrained finite buffer system. We consider a fluid model in action space and state space. However time is discretized. We use reinforcement learning methods and prove the convergence for our problem.

2. Electronic Design Project

Adviser: Prof. Girish Kumar, Prof. L.R. Subramaniam

Duration: Jan 04-Dec 04

- 100Mhz to 1 Ghz Network Analyzer. The project involved dealing with actual construction of RF components like couplers, antennas, and developing high frequency circuits. It was sponsored by an Indian company, to produce a prototype for indigenous network analyzer.
- Design of an novel SMS based embedded system, which would enable to control appliances using SMS (Short message service).

3. Research Project

Adviser: Prof. Vishal Sharma

Duration: Jan 05-May 05

- Implementation of 802.16 Mac protocol in Qualnet and device a novel DRR scheduling algorithm suitable for WiMax standard.

4. Course projects

- Channel Estimation algorithms for MIMO-OFDM system under Rayleigh fading channel condition using Adaptive (LMS, RLS) and Non Adaptive filters (MMSE) and comparative study. (Jan-05 April-05)
- Proposed a delay based congestion avoidance protocol modifying FAST-TCP to consider only forward delay. (July 05- Oct 05)
- Implementation of spectral subtraction based Novel implementable real time Noise cancellation algorithm in TMS320C64x. (Jan 05- April 05)
- Application of wavelet theory on multi-carrier modulation (DWMT) (Jan 05 - April 05).
- Software Projects:
 - Implementation of ARP, RIP protocol
 - Implementation of parallel searching and sorting using MPI (parallel processing library)
 - Software to reduce boolean expressions using Karnaugh Map.
- Construction of micro mouse which could find the Path in given arbitrary Maze, and was maneuvered using Flood Fill Algorithm. (Oct 02-Jan 03)

Professional Experience

Summer Internship

Place: ITTIAM Systems (P)Ltd, Bangalore, India.

Duration: May, 2004 - July, 2004

Worked on live project of "MPEG4 (H.263) encoding on C64x (DM642)" The project involved optimal implementation (using pipelining) of motion estimation in assembly.

Computer Skills

- Statistical Packages: R, Matlab
- Languages: C++, Perl, Fortran, Unix shell scripts, Visual C++, MPI parallel processing library, PVM.
- Simulation softwares: Qualnet, NS-2.