MEGHNA KHATURIA

meghnakhaturia@gmail.com, meghnak@iitb.ac.in
www.ee.iitb.ac.in/course/~meghnak

RESEARCH INTERESTS

Wireless Networks and Systems, Frugal 5G, Fog Computing, Software Defined Networking, 4G & 5G Standards, Rural Broadband Networks

EDUCATION

M.Tech + Ph.D.	**Indian Institute of Technology Bombay** *Electrical Engineering*; CPI: 8.88/10.0	*2014-expected 2021*
B.Tech	**Sardar Vallabhbhai National Institute of Technology, Surat** *Electronics and Communication Engineering*; CPI: 8.31/10.0	*2009-2013*

RESEARCH EXPERIENCE

PH.D. DISSERTATION, IIT BOMBAY

Title: *On designing network elements and mechanisms of Frugal 5G architecture for rural broadband access*

Advisor: *Prof. Abhay Karandikar*

- Developed a novel heterogenous network architecture enabling rural connectivity – **Frugal 5G**
- Implemented Frugal 5G network architecture via existing technology standards (3GPP 5G and IEEE802.11) and studied its performance through simulations
- Proposed and analyzed simulated annealing based algorithm for planning wireless middle mile network (connecting Wi-Fi access points to point of presence)
- Proposed and analyzed graph-theoretic algorithm for spectrum sharing among multi-operator middle mile networks
- Conducted experiments on **TV White Space testbed** (first large-scale testbed in India) spanning seven villages in rural Maharashtra
- Worked on development of wireless network planning tool for **BharatNet** Project

STANDARDIZATION ACTIVITIES

- Serving as a Secretary for **IEEE P2061 Standard Development Project** – "Architecture for Low Mobility Energy Efficient Network for Affordable Broadband Access"
- Made several contributions that may form part of P2061 standard
- Actively involved in development of standard draft

PATENTS

1. **Meghna Khaturia**, Pranav Jha, Abhay Karandikar, "A Wireless Network Architecture", Indian Patent, No. 201921027947.

PUBLICATIONS

JOURNAL PUBLICATIONS

1. **Meghna Khaturia**, Pranav Jha, and Abhay Karandikar. "5G-Flow: Flexible and Efficient 5G RAN Architecture Using OpenFlow," *Journal of Computer Networks* (Revised and Resubmitted).
2. **Meghna Khaturia**, Pranav Jha, and Abhay Karandikar. "Connecting the Unconnected: Towards Frugal 5G Network Architecture and Standardization," *IEEE Communications Standards Magazine*, vol. 4, no. 2, pp. 64-71, June 2020.

3. Animesh Kumar, Abhay Karandikar, Gaurang Naik, **Meghna Khaturia**, Shubham Saha, Mahak Arora, and Jaspreet Singh, "Toward enabling broadband for a billion plus population with TV white spaces," *IEEE Communications Magazine*, vol. 54, pp. 28-34, July 2016.

BOOK CHAPTER
1. **Meghna Khaturia**, Sarbani Banerjee Belur, and Abhay Karandikar, "Chapter 5 – TV White Space Technology for Affordable Internet Connectivity," in *TV White Space Communications and Networks*, pp. 83-96, 2018.

CONFERENCE PAPERS (PEER-REVIEWED)
1. **Meghna Khaturia**, Akshatha Nayak, Pranav Jha, Abhay Karandikar, "5G-Serv: Decoupling User Control and Network Control in the 3GPP 5G Network," *Conference on Innovation in Clouds, Internet and Networks (ICIN)*, March 2021.
2. **Meghna Khaturia**, Kumar Appaiah, and Abhay Karandikar. "On Efficient Wireless Backhaul Planning for the "Frugal 5G" Network," in proceedings of *IEEE WCNC Future Networking Workshop for 5G and Beyond Testbed and Trials*, April 2019.
3. **Meghna Khaturia**, Jaspreet Singh, Akshay Patil, Sarbani Banerjee Belur, Abhay Karandikar, Prasanna Chaporkar, and Tejashri Ghadge. "Towards Frugal 5G: A Case Study of Palghar Test-bed in India," in proceedings of *IEEE WCNC Future Networking Workshop for 5G and Beyond Testbed and Trials*, April 2019.
4. **Meghna Khaturia**, Sweety Suman, Abhay Karandikar, and Prasanna Chaporkar, "Spectrum Sharing for LTE-A Network in TV White Space," in *Twenty Fourth National Conference on Communications (NCC)*, pp. 1-6, 2018.
5. Sarbani Banerjee Belur, **Meghna Khaturia**, and Nanditha P. Rao. "Community-led Networks for Sustainable Rural Broadband in India: the Case of Gram Marg," *Community Networks: the Internet by the People, for the People. Association for Progressive Communications*, 2017.

CONFERENCE PAPERS (UNDER REVIEW/UNDER PREPARATION)
1. **Meghna Khaturia**, Pranav Jha, Abhay Karandikar, "Realizing the Frugal 5G Network", To be submitted.

INTERNSHIPS

Research Intern @ NICT Japan *Jun-Jul 2016*
Advisor: *Dr. Kentaro Ishizu and Dr. Mirza Kibria*
Developed linear programming based algorithm to efficiently share spectrum among multiple operators

Research Intern (GIPEDI) @ IIT Delhi *May-Jul 2012*
Advisor: *Prof. Subrat Kar and Prof. Brijesh Lal*
Built Text-To-Speech (TTS) library after installing dsp/bios kernel on TMS320C5510 processor

INVITED TALKS

Invited Talk on Frugal 5G Network Architecture at *Future Optical Transport Networks Summit*, Mumbai *Sept 2019*

Poster presentation on IIT Bombay TV White Space Trial for Broadband Access at *White Space Alliance Global Summit* on Digital India, New Delhi *Oct 2015*

SKILLS

Programming and Scripting Languages: C, C++, Bash, HTML
Tools: MATLAB, network simulator-3

AWARDS, SCHOLARSHIPS AND LEADERSHIP ROLES

• Our solution for rural broadband connectivity – Gram Marg won **Mozilla Equal Rating Innovation Challenge** among 98 submissions from across the globe	*2017*
• Head organizer for workshop on **Roadmap to Rural Connectivity: Challenges and Opportunities** attended by several academicians and industry experts	*2017*
• Collaborated in preparation of project proposal for 25 village rural broadband testbed submitted to Tata trust with a specific focus on preparing budget and timelines	*2016*
• Part of the team awarded at White Space Alliance Global Summit on Digital India for "Pioneering Work on TV White Spaces and Digital India"	*2015*
• IndusInd Foundation Scholarship	*2009-13*
• Sarvhitkari Sansthan Scholarship	*2010-12*

PROFESSIONAL SERVICE

Peer-Reviewed Articles for:
- IEEE Global Communications Workshops
- IEEE Signal Processing and Communications Conference
- IEEE Wireless Communication Letters