

Dr.Sandeep Patel



Asst. Professor Grade – I
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Education

PhD, Bharti School of Telecommunications Technology & Management IIT Delhi	2017-2022
MS (R) in Electrical Engineering IIT Delhi	2010-2013
B. Tech in Electronics and Communication Engineering IIT Roorkee	2003-2007

Professional Experience

Asst. Professor Grade – I Dept. Electronics & Comm. Engg. Maulana Azad National Institute of Technology, Bhopal	Mar, 2025- till date
IRRS Cadre, Wireless Planning & Coordination (WPC) Wing Department of Telecommunications through Engineering Services Examination by UPSC	2013- Mar, 2025
Adobe Systems India Pvt. Ltd, Noida Member Technical Staff Flash Media Server team	2008-2010
Nvidia Graphics Pvt. Ltd., Pune Software Engineer	2007-2008

List of Publications

1. S. Patel, R. Dhuli, B. Lall, "Reconstruction of a Signal from Multirate Observations: A Recursive Approach", Signal Processing, 2023.

2. A. K. Dutta, S. D. Joshi, S. Patel and B. Lall, "Measures for the Degree of Time Variance: Application to Filter Banks," in IEEE Access, vol. 10, pp. 121287-121300, 2022.
3. S. Patel, R. Dhuli and B. Lall, "Analysis of Signals via Non-Maximally Decimated Non-Uniform Filter Banks," in IEEE Transactions on Circuits and Systems I: Regular Papers, vol. 66, no. 10, pp. 3882-3895, Oct. 2019, doi: 10.1109/TCSI.2019.2914302.
4. S. Patel, R. Dhuli, B. Lall, "Design and analysis of matrix Wiener synthesis filter for multirate filter bank", Signal Processing, Volume 102, 2014, Pages 256-264.
5. S. Patel, R. Dhuli and B. Lall, "Matrix adaptive synthesis filter for uniform filter bank," 2013 National Conference on Communications (NCC), New Delhi, India, 2013, pp. 1-5, doi: 10.1109/NCC.2013.6487978.

Field Studies & Projects

WPC Wing

1. Field Study for Assessing Inter-band Guard Band between 800 MHz and 900 MHz
In this work, a field study was carried out with Telecom Service Providers on whether the guard band between 800 MHz and 900 MHz telecom bands can be reduced. For that, an experimental setup was established, taking four eNodeB with live user operations. Reduction in guard band carried out with various settings and report submitted.
2. Interference analysis due to 5G on C-band cable TV and VSAT operation
In India, 5G band in 3.5 GHz has been allocated to various telecom service providers. Due to that, interference complaints were received from a cable TV operator and a VSAT operator. A detailed study was carried out to ascertain the interference and suggest remedial measures.
3. Field Study at Giant Meterwave Radio Telescope (GMRT), Narayangaon, Maharashtra
GMRT consists of 30 fully steerable parabolic dishes of 45m diameter spread over distances of upto 25 km. The facility is used for astronomical observations. For that, they use a frequency band 150-1450 MHz for reception. A field study was carried out to identify the source of interference in their band of operation for mitigation measures.
4. Interference resolution in the case of a satellite of European Space Agency
European Space Agency reported harmful interference to the SMOS satellite, orbiting in LEO sun-synchronous orbit. A visit was carried out at remote locations in Uttarakhand to identify the source of interference.

Adobe Systems India Pvt. Ltd

1. Pluggable Scripting

The goal of this project was to make design changes in the Flash Media Server (FMS) to have an extensible scripting model where different scripting engines can be plugged into FMS in order to support multiple scripting languages.

2. Absolute TimeCode

This enhancement is required in FMS to support seamless integration of MBR and DVR. FMS presently requires stream to have an identical timeline for MBR to work correctly, which is not fulfilled in case of multiple recordings at different times in DVR scenarios.

Nvidia Graphics Pvt. Ltd

Member of Graphics Processing Unit (GPU)-Video Group which is involved in developing and enhancing GPU drivers. Also worked with diagnostic tools, designing and developing test cases for the software driver validation.

Teaching Experience

1. Worked as a Teaching Assistant (TA) under Prof Surendra Prasad, former Director of IIT Delhi. I assisted him in conducting exams, evaluating answer sheets, preparing assignments conducting surprise tests and problem solving sessions.
2. Chief Examiner in GMDSS Examination: WPC Wing of DoT conducts Global Maritime Distress and Safety System (GMDSS) examination for candidates looking for jobs in the maritime industry. This examination is mandatory as per international guidelines to enhance the safety of life at sea. I have been nominated as Chief examiner for various exams carried out for this purpose.
3. Lectures at WMTDC: WPC Wing has a training center Wireless Monitoring Training & Development Centre (WMTDC), at New Delhi. I have given lectures on case studies on inspection of wireless licenses, Government e-Marketplace (GeM) procurement, and wireless licensing to new recruits through UPSC examination. Further, I also delivered a lecture on interference hunting to Directorate of Coordination Police Wireless (DCPW), Ministry of Home Affairs.
4. Chief Examiner in ASOC examination: WPC Wing conducts Amateur Station Operator's Certificate (ASOC) examination for hobbyists in the field of wireless communication. I have conducted a number of ASOC examinations as a chief examiner.

Internships

1. Neomagic Semiconductor India Pvt. Ltd.

JPEG 2000 Decoder

This Project involved understanding JPEG 2000 Standard and its reference software. The reference software was verified for functionality and conformance using the JPEG 2000 conformance criteria and then modified for handheld devices.

2. ClearTrail Technologies Pvt. Ltd.

Reconstruction of IP frames from Fragmented IP Packets

This project involved understanding the concept of Computer Networks and TCP/IP Protocol. Using the header information in IP packets, IP frames were reconstructed. The packet traffic was also analyzed.

Others

1. I have practical experience of various Government rules & regulations being Head of office for five years. I also have good experience on carrying out procurement through Government e-Marketplace (GeM).
2. I held post of Estate officer at my last office which is a quasi-judicial post as per Public Premises (Eviction of Unauthorised Occupants) Act, 1971. My team was successful in clearing an encroachment of roughly 5 acres in Mumbai whose valuation is in crores.
3. Good academic records throughout the career.
 - IIT JEE: 393 rank
 - UPSC Engineering Service Examination : 33 rank
 - Microsoft Code4bill Contest: Among top 1000 contestants.
 - Physics Olympiad: Top 1% in state.