

# Pankaj Kumar Sharma, Ph.D.

Assistant Professor

Department of Electronics and Communication Engineering,  
National Institute of Technology Rourkela, Odisha, India, 769008.

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## 1 Personal Information

**Name:** Pankaj Kumar Sharma  
**Gender:** Male  
**Nationality:** Indian  
**Office Address:** Room No. 314, Department of  
Electronics and Communication Engineering,  
National Institute of Technology Rourkela,  
Odisha, India, 769008  
**Language Proficiency:** English (Advanced), Hindi (Native)  
**International Travel History:** Thailand (May 2019), USA (May 2018),  
Singapore (December 2017),  
South Korea (April 2017, June 2019), Malaysia (May 2016)

## 2 Education

- Degree: Ph.D. in Electrical Engineering, July 2013 to February 2017.  
University: Indian Institute of Technology (IIT) Indore, Indore, Madhya Pradesh, India.  
Thesis Title: *Performance Analysis of Cooperative Cognitive Spectrum Sharing Systems over Fading Channels.*
- Degree: Master of Technology (M.Tech.) in Electronics and Communication Engineering,  
July 2011 to June 2013.  
University: Dr B R Ambedkar National Institute of Technology (NIT) Jalandhar, Punjab,  
India.  
Dissertation Title: *Performance Analysis of Multihop Wireless Networks over Composite Fading Channels.*
- Degree: Bachelor of Technology (B.Tech.) in Electronics and Communication Engineering,  
August 2005 to June 2009.  
University: Uttar Pradesh Technical University, Lucknow, Uttar Pradesh, India.  
Institute: Raj Kumar Goel Institute of Technology, Ghaziabad, Uttar Pradesh, India

## 3 Work Experience

### Current Position:

- Assistant Professor, Department of Electronics and Communication Engineering, National Institute of Technology Rourkela, Odisha, India. (September 2018 to present).

## Previous Positions:

- Visiting Postdoctoral Research Fellow at College of Information and Communication Engineering, Sungkyunkwan University (SKKU), Suwon, South Korea. (June 2019 to July 2019). Advisor: Dr Dong In Kim, Professor and Director, Energy Harvesting Communications Research Center, College of Information and Communication Engineering, Sungkyunkwan University (SKKU), Suwon, South Korea.
- Postdoctoral Research Fellow at College of Information and Communication Engineering, Sungkyunkwan University (SKKU), Suwon, South Korea. (April 2017 to August 2018). Advisor: Dr Dong In Kim, Professor and Director, Energy Harvesting Communications Research Center, College of Information and Communication Engineering, Sungkyunkwan University (SKKU), Suwon, South Korea.

## 4 Honours and Awards

- Received prestigious “Brain Korea 21 Plus” postdoctoral fellowship from National Science Foundation, Govt. of Korea for September 2017-August 2018.
- Recipient of “International Travel Support” from Science and Engineering Research Board, Department of Science and Technology, Govt. of India, for participation in IEEE International Conference on Communications (ICC) 2016, Kuala Lumpur, Malaysia, 23-27 May, 2016.
- Awarded “Student Travel Grant” by European Commission, for participation in European Conference on Networks and Communications (EuCNC) 2016, Athens, Greece, 27-30 June, 2016.
- Awarded “International Travel Grant” by M.P. Council of Science and Technology, Govt. of state Madhya Pradesh, India, for participation in European Conference on Networks and Communications (EuCNC) 2016, Athens, Greece, 27-30 June, 2016.

## 5 Sponsored Project(s)

**Project Title:** Performance Evaluation and Optimization of UAV-Enabled Cellular Communications  
**Budget:** INR 13,50,760/-  
**Duration:** 2 Years (Dec. 2019-continue)  
**Agency:** Start-up Research Grant (SRG), Science and Engineering Research Board (SERB), DST, Govt. of India.

## 6 Professional Memberships

- Member, “Institute of Electrical and Electronics Engineers (IEEE)”, 2015 to present.
- Member, “IEEE Communications Society”, 2016 to present.

## 7 Professional Services

**Editorial Board:** 1. Guest Associate Editor for special research topic *Integrated Space-Aerial-Terrestrial Networks for Global Connectivity* in journal *Frontiers in Communications and Networks*.

**Conference Organizing Chair:** Organizing Secretary, 2<sup>nd</sup> International Conference on Advanced Communication Technologies and Signal Processing (ACTS-2021), NIT Rourkela, India, 15-17 December, 2021.  
<http://acts2021.nitrkl.ac.in>.

- Technical Program Committee:**
1. IEEE Global Communications Conference (GLOBECOM 2021), Madrid, Spain, 7-11 December 2021  
Selected Areas in Communications - Satellite and Space Communications.
  2. International Conference on IoT and its Applications (ICIA-2020), NIT Jamshedpur, India, 26-27 December, 2020.  
Track: Computing.
  3. IEEE International Conference on Communications (ICC 2021), Montreal QC, Canada, 14-18 June 2020.  
Track: Selected Areas in Communications - 8: Satellite and Space Communications.
  4. IEEE International Conference on Advanced Communication Technologies and Signal Processing (ACTS-2020), NIT Silchar, 4-6 December, 2020.
  5. IEEE International Conference on Communications (ICC 2020), Dublin, Ireland, 7-11 June 2020.  
Track: Selected Areas in Communications - 8: Satellite and Space Communications.
  6. IEEE International Conference on Communications (ICC 2019), Shanghai, China, 20-24 May 2019.  
Track: Selected Areas in Communications - 8: Satellite and Space Communications.
  7. IEEE 88th Vehicular Technology Conference: VTC 2018-Fall, Chicago, USA, 27-30 August 2018.  
Track: 8. Wireless Networks: Protocols, Security and Services.

- Conference Session Chair:**
1. IEEE International Conference on Advanced Communication Technologies and Signal Processing (ACTS-2020), NIT Silchar, 4-6 December, 2020.  
Track: T1.1: Communications and Networking.
  2. IEEE Global Communications Conference (GLOBECOM 2017), Singapore, December 2017.  
Session- Cognitive Radio and Networks, Symposium (CRN 4)-Interference Management.

## 8 List of Publications

### Book Chapter:

1. **P. K. Sharma**, B. Yogesh, and D. Gupta, “Overlay multi-user satellite-terrestrial networks for IoT in the presence of interference,” *in edited book 5G and Beyond Wireless Systems: PHY Layer Perspective*, Springer Nature, Singapore, 2020.

### Journals:

1. **P. K. Sharma** and D. Gupta, “Outage performance of multi-UAV relaying-based imperfect hardware hybrid satellite-terrestrial networks,” *IEEE Systems Journal*, accepted for publication on 17 June 2021.
2. **P. K. Sharma**, D. Gupta, and D. I. Kim, “Outage performance of 3D mobile UAV caching for hybrid satellite-terrestrial networks,” *IEEE Transactions on Vehicular Technology*, IEEE early access article published online on 16 June 2021, DOI: 10.1109/TVT.2021.3089742.
3. **P. K. Sharma**, B. Yogesh, D. Gupta, and D. I. Kim, “Performance analysis of IoT-based overlay satellite-terrestrial networks under the interference,” *IEEE Transactions on Cognitive Communications and Networking*, IEEE early access article published online on 19 January 2021, DOI: 10.1109/TCCN.2021.3052507.
4. **P. K. Sharma** and D. I. Kim, “Secure 3D mobile UAV relaying for hybrid satellite-terrestrial networks,” *IEEE Transactions on Wireless Communications*, vol. 19, no. 4, pp. 2770-2784, Apr. 2020.
5. **P. K. Sharma**, D. Deepthi, and D. I. Kim, “Outage probability of 3D mobile UAV relaying for hybrid satellite-terrestrial networks,” *IEEE Communications Letters*, vol. 24, no. 2, pp. 418-422, Feb. 2020.
6. **P. K. Sharma** and D. I. Kim, “Random 3D mobile UAV networks: Mobility modeling and coverage probability,” *IEEE Transactions on Wireless Communications*, vol. 18, no. 5, pp. 2527-2538, May 2019.
7. **P. K. Sharma** and D. I. Kim, “Coverage probability of 3D mobile UAV networks,” *IEEE Wireless Communications Letters*, vol. 8, no. 1, pp. 97-100, Feb. 2019.
8. S. Solanki, **P. K. Sharma**, and P. K. Upadhyay, “Adaptive link utilization in two-way spectrum sharing relay systems under average interference-constraints,” *IEEE Systems Journal*, vol. 12, no. 4, pp. 3461-3472, Dec. 2018.
9. **P. K. Sharma**, P. K. Upadhyay, D. B. da Costa, P. S. Bithas, and A. G. Kanatas, “Performance analysis of overlay spectrum sharing in hybrid satellite-terrestrial systems with secondary network selection,” *IEEE Transactions on Wireless Communications*, vol. 16, no. 10, pp. 6586-6601, Oct. 2017.
10. **P. K. Sharma** and P. K. Upadhyay, “Performance analysis of cooperative spectrum sharing with multiuser two-way relaying over fading channels,” *IEEE Transactions on Vehicular Technology*, vol. 66, no. 2, pp. 1324-1333, Feb. 2017.
11. **P. K. Sharma** and P. K. Upadhyay, “Cognitive relaying with transceiver hardware impairments under interference constraints,” *IEEE Communications Letters*, vol. 20, no. 4, pp. 820-823, Apr. 2016.

12. P. K. Upadhyay and **P. K. Sharma**, “Max-max user-relay selection scheme in multiuser and multirelay hybrid satellite terrestrial relay systems,” *IEEE Communications Letters*, vol. 20, no. 2, pp. 268-271, Feb. 2016.
13. **P. K. Sharma** and P. K. Upadhyay, “Cooperative spectrum sharing in two-way multi-user multi-relay networks,” *IET Communications*, vol. 10, issue 1, pp. 111-121, Jan. 2016.
14. **P. K. Sharma**, S. Solanki, and P. K. Upadhyay, “Outage analysis of cognitive opportunistic relay networks with direct link in Nakagami- $m$  fading,” *IEEE Communications Letters*, vol. 19, no. 5, pp. 875-878, May 2015.

#### Conferences:

1. S. Solanki, D. S. Gurjar, **P. K. Sharma**, S. K. Sharma, and S. Chatzinotas, “On the secrecy-reliability performance trade-off for NOMA-enabled 5G mmWave networks,” *IEEE International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC 2021)*, Virtual Conference, Sept. 2021.
2. **P. K. Sharma**, D. Gupta, and D. I. Kim, “Cooperative AF-based 3D mobile UAV relaying for hybrid satellite-terrestrial networks,” *IEEE Vehicular Technology Conference 2020 (VTC 2020-Spring)*, Antwerp, Belgium, May 2020.
3. **P. K. Sharma**, B. Yogesh, and D. Gupta, “Internet of things-enabled overlay satellite-terrestrial networks in the presence of interference,” *National Conference on Communications (NCC 2020)*, IIT Kharagpur, India, Feb. 2020.
4. **P. K. Sharma** and D. I. Kim, “Coverage probability of 3D UAV networks with RWP mobility-based altitude control,” *IEEE International Conference on Communications 2018 (ICC 2018)*, Kansas City, Missouri, USA, May 2018.
5. **P. K. Sharma** and D. I. Kim, “UAV-enabled downlink wireless system with non-orthogonal multiple access,” *IEEE Global Communications Conference 2017 (GLOBECOM 2017)*, Singapore, Dec. 2017.
6. S. Solanki, **P. K. Sharma**, P. K. Upadhyay, D. B. da Costa, P. S. Bithas, and A. G. Kanatas, “Cognitive multi-relay networks with RF hardware impairments and channel estimation errors,” *IEEE Global Communications Conference 2017 (GLOBECOM 2017)*, Singapore, Dec. 2017.
7. **P. K. Sharma**, P. K. Upadhyay, D. B. da Costa, P. S. Bithas, and A. G. Kanatas, “Hybrid satellite-terrestrial spectrum sharing system with opportunistic secondary network selection,” *IEEE International Conference on Communications 2017 (ICC 2017)*, Paris, France, May 2017.
8. P. K. Upadhyay and **P. K. Sharma**, “Multiuser hybrid satellite-terrestrial relay networks with co-channel interference and feedback latency,” *European Conference on Networks and Communications 2016 (EuCNC 2016)*, Athens, Greece, June 2016. (**Awarded student travel grant from EuCNC 2016 and international travel grant from M.P. Council for Science and Technology, Bhopal for presenting this paper**).
9. S. Solanki, **P. K. Sharma**, and P. K. Upadhyay, “Cognitive relay sharing for two-way primary transmissions under Nakagami- $m$  fading channels,” *International Conference on Signal Processing and Communications 2016 (SPCOM 2016)*, IISc Bangalore, India, June 2016.

10. S. Solanki, **P. K. Sharma**, and P. K. Upadhyay, "Average interference-constrained cognitive two-way relaying with efficient link utilization," *IEEE International Conference on Communications 2016 (ICC 2016)*, Kuala Lumpur, Malaysia, May 2016. **(Received international travel grant from SERB, DST, Govt. of India for presenting this paper).**
11. **P. K. Sharma** and P. K. Upadhyay, "Performance of two-way overlay spectrum sharing systems in the presence of co-channel interference," *IEEE Wireless Communications and Networking Conference 2016 (WCNC 2016)*, Doha, Qatar, April 2016.
12. **P. K. Sharma** and P. K. Upadhyay, "Overlay spectrum sharing with multiuser two-way relaying using TDBC in Nakagami- $m$  fading," *IEEE Vehicular Technology Conference (VTC 2015-Spring)*, Glasgow, Scotland, May 2015.

## 9 Laboratory Development

- Wireless Communications and Aerial Networks (WiCAN) Lab, EC-224, Department of Electronics and Communication Engineering, NIT Rourkela.

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Place: Rourkela, India

Date: June, 2021

(Dr Pankaj Kumar Sharma)

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