

RAKESH KUMAR, PhD

Mandi, Himachal Pradesh, India — DOB: August 04, 1997

Phone: +91-7807128562, +91-8219132514

Email: kumarrakesh0791@gmail.com

Google Scholar: [Rakesh Kumar](#) — ResearchGate: [Rakesh Kumar](#)



ACADEMIC PROFILE

Adaptable, highly-motivated, and result-driven academician with a PhD in Electronics & Communication Engineering, specializing in robust steganography and information security for social networking platforms. Proven track record of high-impact research, evidenced by **first-author publications in reputed Q1 SCIE/Scopus-indexed international journals** (Elsevier, Springer) and international book chapters. Possesses a strong foundation in both software (Image Processing, Machine Learning) and hardware (Embedded Systems, Robotics). Experienced in teaching undergraduate courses, with a strong commitment to institutional service, innovative pedagogy, and bridging theoretical concepts with hands-on practical applications.

EDUCATION

Doctor of Philosophy in Electronics & Communication Engineering *Sep 2021 – Mar 2026*
Maharaja Ranjit Singh Punjab Technical University (MRSPTU), Bathinda, PB (Conferred)

- **Thesis:** *Efficient Content Adaptive Robust JPEG Steganography for Social Networking Platforms.*
- **Key Contribution:** Developed four highly efficient, novel secret information concealment schemes (SARAS, MRAS, CEDAR, DRAS) resilient to aggressive recompression on platforms like X, LinkedIn, WhatsApp, and Facebook.
- **Honors:** Thesis adjudged **”Worthy of Distinction”** by Foreign and Indian examiners and cited as a valuable resource for the international research community.

Master of Technology in Electronics & Communication Engineering *Aug 2019 – Aug 2021*
MRSPTU, Bathinda, PB **CGPA: 8.3/10 (First Division)**

- **Thesis:** Contributed a new distortion function for JPEG image steganography.
- **Major Project:** Designed and developed a MATLAB-based GUI for image steganography techniques.

Bachelor of Technology in Electronics & Communication Engineering *Aug 2015 – Jul 2019*
Himachal Pradesh Technical University (HPTU), Hamirpur, HP **CGPA: 7.9/10 (First Class)**

- **Major Project:** Designed and developed a MATLAB-based GUI for an Automatic Attendance System.
- **Minor Project:** Developed a DTMF-based Robotic System for distant control applications.

ACADEMIC & INDUSTRIAL EXPERIENCE

Assistant Professor (Lecture Basis) *Aug 2025 – Jan 2026*
Department of Electronics and Communication Engineering, GZSCCET, MRSPTU, Bathinda

- Delivered lectures and managed teaching responsibilities for undergraduate courses across both Electronics & Communication Engineering and Computer Science & Engineering disciplines.
- Received official certification of satisfactory work, conduct, and pedagogical effectiveness from the Head of Department.

Industrial Trainee *Jun 2018 – Jul 2018*
Himalayan Mechatronics Pvt. Ltd., Mandi, Himachal Pradesh

- Successfully completed a 6-week intensive training program on Embedded Systems for Robotics.
- Developed and implemented an embedded system (hardware and software) to control a robot, including data acquisition from sensors and actuator control using Arduino and PIC microcontrollers.

RESEARCH PUBLICATIONS

Peer-Reviewed International Journals (SCIE/Scopus Indexed, Q1)

1. **Kumar, R.**, Bansal, S., & Bansal, R. K. (2026). Dealing with downward recompression for robust steganography in high quality JPEG images. *Journal of Visual Communication and Image Representation (Elsevier)*, 118, 104817. doi:10.1016/j.jvcir.2026.104817 [SCIE, Q1]
2. **Kumar, R.**, Bansal, S., & Bansal, R. K. (2025). MRAS: A matching robust adaptive steganography scheme for JPEG images over social networking platforms. *Signal Processing (Elsevier)*, 238, 110172. doi:10.1016/j.sigpro.2025.110172 [SCIE, Q1]
3. **Kumar, R.**, Bansal, S., & Bansal, R. K. (2025). Downward recompression robust JPEG steganography via efficient content-adaptive embedding. *Multimedia Tools and Applications (Springer)*. doi:10.1007/s11042-025-21136-y [SCIE/Scopus, Q1]

Book Chapters

1. **Kumar, R.** (2024). Hidden in plain sight: steganography's role in digital security. In *Applications of Artificial Intelligence in the Internet of Things* (pp. 247-262). Cambridge Scholars Publishing. ISBN: 978-1-0364-1107-7.

Conference Proceedings, Presentations & Seminars

1. **Kumar, R.** (Dec 2024). *Steganography on JPEG Images: Issues and Challenges*. 3rd IEEE International Conference on Communication, Control and Intelligent Systems (CCIS 2024), GLA University, Mathura.
2. **Kumar, R.** (Mar 2024). *Robust Data Hiding for High Fidelity JPEG Images Over Social Networking Platforms*. 4th International Conference on Information Technology (InCITE-2024), Amity University. (Published by Springer).
3. **Kumar, R.** (Nov 2023). *A Resilient Approach to Robust JPEG Steganography: Ensuring Hidden Data Integrity*. 1st IEEE International Conference on Integrated Intelligence and Communication Systems (ICIICS-2023), Sharnbasva University, Kalaburagi.
4. **Kumar, R.** (Oct 2023). *Exploring Steganography in 3D Manufacturing Models*. International Conference on Advancements & Futuristic Trends in Mechanical & Materials Engineering (AFTMME-23), MRSPTU. [Awarded Technical Presentation Award]
5. **Kumar, R.** (Oct 2023). *Robust JPEG Steganography: A Review*. One Day National Seminar on Future Technologies and its Impact on Humans and Society, The Institution of Engineers (India), Bathinda Local Centre.
6. **Kumar, R.** (Jul 2021). *A Novel Upgraded Uniform Embedding Technique for JPEG Steganography*. 5th World Conference on Smart Trends in Systems, Security and Sustainability (WorldS4 2021), London, UK. (Published by IEEE/Springer).

ADMINISTRATIVE SERVICE & AWARDS

- **Official Member, Flying Squad Team:** Appointed to oversee the Dec 2025 University Examinations at I K Gujral Punjab Technical University (IKGPTU), Kapurthala.
- **Vice-Chancellor's Commendation:** Received a formal letter of commendation from the Vice-Chancellor, IKGPTU, for exemplary alertness, impartiality, and strict adherence to university norms during examination duties (2026).
- **"Worthy of Distinction" Citation:** Awarded by Foreign and Indian examiners for Ph.D. doctoral research thesis (2026).
- **Grade A+:** Achieved in the Malaviya Mission Teacher Training Programme FDP on NEP-2020 (2025).

TECHNICAL PROFICIENCY

- **Programming Languages:** MATLAB, Python, Embedded C.
- **Software & Engineering Tools:** MATLAB, GNU Octave, NI Multisim, NI Tool, Proteus Circuit Designer, Keil μ Vision.
- **IDEs & Operating Systems:** Arduino IDE, Python IDE, Windows, Linux.
- **Office & Productivity:** Microsoft Office, LibreOffice, Zoom, Cisco WebEx, Google Meet.

PROFESSIONAL TRAININGS & FDPS

- **FDP on NEP-2020: Orientation & Sensitization** | *UGC-MMTTC, Ministry of Education, Govt. of India & JNV University* (Feb 2025)
- **FDP on Experiential Learning on Mobile Forensics** | *ISEA, Ministry of Electronics and IT (MeitY), Govt. of India & IKGPTU* (Jan 2025)
- **FDP on Motivation, Team Building and Creativity in Entrepreneurship** | *AICTE Recognized, NITTTR Chandigarh & Ministry of Education, Govt. of India* (Mar 2025)
- **ATAL FDP on Reinforcement Learning and its Applications** | *AICTE ATAL Academy & IIT Ropar* (Nov 2021)
- **ATAL FDP on Image Processing and Computer Vision** | *AICTE ATAL Academy & Guru Gobind Singh IP University* (Nov–Dec 2021)
- **ATAL FDP on Signal Processing & ML Techniques** | *AICTE ATAL Academy & SLIET Pb* (Sept 2021)
- **Workshop on Deep Learning Networks for Image Processing** | *IEEE India Council* (Dec 2021)
- **STTP on Internet of Things & its Applications** | *AICTE & MRSPTU Bathinda* (Feb 2021)
- **STTP on Python & Arduino Platform (using C)** | *TEQIP-III, MHRD, Govt. of India, IIT Hyderabad & ABVGIET* (Apr 2018)

SKILLS & INTERESTS

- **Professional Skills:** Strong written and oral communication skills for manuscript development, project management, rapid adaptability to new development processes, and excellent technical instruction capabilities.
- **Interests:** Intellectual Curiosity, Gardening and Planting.

References available upon request.