



## **Dr. ANIL KUMAR SONI**

**Assistant Professor (Senior Scale)**  
**Electronics and Communication Engineering,**  
**School of Studies of Engineering & Technology**  
**Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)**

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## **Educational Qualification**

**Ph. D.** (NDT Instrumentation and Image Processing), 2016  
Indira Gandhi Centre for Atomic Research, Kalpakkam, (HBNI-BARC, Mumbai)

**M. Tech.** (Digital Communication Engineering), 2009  
R. V. College of Engineering, Bangalore, (Visvesvaraya Technological University, Belgaum)

**B. E.** (Electronics & Telecommunication Engineering), 2006  
Chouksey Engineering College, Bilaspur, (Guru Ghasidas University, Bilaspur)

## **Technical Skills**

### **Area of interest:**

- Sensor Development
- Instrumentation Development
- NDT Image Processing
- Signal Processing
- Absorber design

### **Software languages:**

- Matlab
- LabVIEW
- COMSOL
- CST STUDIO SUIT
- CIVA

### Course Taught:

- Signal and System
- Digital Signal Processing
- Digital System Design
- Automatic Control System
- Network Analysis
- Instrumentation and measurement
- Communication System
- Digital Image Processing
- Research Methodology

### Work Experience

**Assistant Professor, Guru Ghasidas Vishwavidyalaya Bilaspur** (February 2020-Present)

**Sr. Assistant Professor, Madanapalle Institute of Technology and Science, Madanapalle** (April 2018 – February 2020)

**Assistant Professor , Lakhmi Chand Institute of Technology, Bilaspur** (January 2017–April 2018)

**Assistant Professor , Central College of Engineering and Management, Raipur** (February 2016–January 2017)

**DGFS Ph.D Fellow, Indira Gandhi Center for Atomic Research, Kalpakkam** (February 2011–January 2016)

**Lecturer, Lakhmi Chand Institute of Technology, Bilaspur** (February 2010 – February 2011)

**Lecturer, Dr. C. V. Raman University, Bilaspur** (July 2009 – January 2010)

### Scholastic Achievements

- Best Paper Award in 12th International Conference on Computing, Communication and Sensor Networks organized by Applied Computer Technology, Kolkata, 2023
- Received Research Seed Money Grant (Rs. 1 Lakh) by GGV, Bilaspur, 2023
- Top Performing Mentor by NPTEL, Swayam, MHRD, Govt. of India, 2019.
- Best Paper Award by OPJU, Raigarh, 2019.
- DGFS-Ph.D. Fellowship by DAE, BARC Mumbai, Govt. of India, 2011.
- GATE Scholarship by MHRD, Govt. of India, 2007.

## List of publications

### Patent:

- [1]. **Australian Patent Granted:** A SYSTEM AND A METHOD FOR AUTOMATED IRRIGATION USING INTERNET OF THINGS, Patent Number: 2020104385, Year March 2021.

### Journal Publications (SCI/Scopus Indexed):

- [1]. Shrawan Kumar Patel, Ranjeet Kumar, **Anil Kumar Soni\***, Chandan Tamrakar and Chandramauleshwar Roy, 'Theoretical optimization and design of graphene-based multiple-band terahertz absorbers for sensing applications', *Microsystem Technologies*, Volume 31, pages 845–857, 2024. (SCI Indexed Impact factor:1.6)
- [2]. **Anil Kumar Soni\***, Aradhana Soni, and Chandan Tamrakar, 'BayWT Image Fusion Method for Enhancement of Eddy Current Sub-surface Defect Images', *SN Computer Science* volume 4, Article number: 837, 2023, <https://doi.org/10.1007/s42979-023-02310-1> (Scopus Indexed).
- [3]. **Anil Kumar. Soni\***, S. Mahadevan, S. Thirunavukkarasu and B. Purna Chandra Rao, 'A study on the scan plans for rapid flaw detection by eddy current non-destructive evaluation', *IETE Journal of Research*, January 2022, <https://doi.org/10.1080/03772063.2021.2021822>. (SCI Indexed Impact factor:1.6)
- [4]. **Anil Kumar Soni**, Pushpa Giri, and Gaurav Varshney, 'Metal-Free Super-Wideband THz Absorber for Electromagnetic Shielding', *Physica Scripta*, Vol. 96, No. 12, 125866, November 2021, <https://doi.org/10.1088/1402-4896/ac3ea1>. (SCI Indexed Impact factor:2.6)
- [5]. **Anil Kumar Soni** and Gaurav Varshney, 'Multiband Generation and Absorption Enhancement in a Graphite based Metal-Free Absorber', *Plasmonics*, Vol. 16, pp. 241-252, 2020, <https://doi.org/10.1007/s11468-020-01286-5>. (SCI Indexed Impact factor: 3.3).
- [6]. **Anil Kumar. Soni\*** and B. Purna Chandra Rao, 'Lock-in Amplifier Based Eddy Current Instrument for Detection of Sub-surface Defect in Stainless Steel Plates', *Sensing and Imaging*, Vol. 19, No.32, August 2018. (SCI Indexed Impact factor:1.6)
- [7]. **Anil Kumar Soni**, B. Sasi, S. Thirunavukkarasu and B. Purna Chandra Rao 'Development of eddy current probe for detection of deep sub-surface defects', *IETE Technical Review*, Vol. 33, No. 4, pp. 386-395, November 2015. (SCI Indexed Impact factor: 2.5)
- [8]. **Anil Kumar. Soni**, S. Thirunavukkarasu, B. Sasi, B. Purna Chandra Rao, T. Jayakumar, 'Development of a high sensitive eddy current instrument for detection of sub-surface defects in stainless steel plates', *Insight-Non-Destructive Testing & Condition Monitoring*, Vol. 57, No. 9, pp. 508-512, September 2015. (SCI Indexed Impact factor: 0.80)

### List of Conference Proceeding and Book Chapter

- [1].Chandan Tamrakar, **Anil Kumar Soni\***, Kumar Gulshan Raj and Aditya Raj, "Graphene-Enhanced Tunable THz Absorber for Advanced Biomedical Sensing", IEEE 2025 International Conference on Information, Implementation, and Innovation in Technology (I2ITCON), (Scopus Indexed).
- [2].I. A. Qureshi, **A. K. Soni\*** and S. S. Chauhan, "Thin Metal-Free THz Absorbers: Broadband Sensing Solutions," 2024 Second IEEE International Conference Computational and Characterization Techniques in Engineering & Sciences (IC3TES), Lucknow, India, 2024, pp. 1-5, doi: 10.1109/IC3TES62412.2024.10877433. (Scopus Indexed).
- [3].**Anil Kumar Soni**, Ranjeet Kumar, Shrawan Kumar Patel and Aradhana Soni, 'Non-destructive fusion method for image enhancement of eddy current sub-surface defect images', In: Bajpai M.K., Kumar Singh K., Giakos G. (eds) Machine Vision and Augmented Intelligence—Theory and Applications, Lecture Notes in Electrical Engineering, Vol. 796, pp. 613-621, November 2021. DOI: 10.1007/978-981-16-5078-9\_50 (Scopus Indexed).
- [4].Ranjeet Kumar, **Anil Kumar Soni**, and Aradhana Soni, 'Histogram-based Image Enhancement and Analysis for Steel Surface and Defects Images', In: Bajpai M.K., Kumar Singh K., Giakos G. (eds) Machine Vision and Augmented Intelligence—Theory and Applications, Lecture Notes in Electrical Engineering, Vol. 796, pp. 623-632, November 2021. DOI: 10.1007/978-981-16-5078-9\_51 (Scopus Indexed).

### List of Conference Presented

- [1].**Anil Kumar Soni**, 2023, 'Metal free Terahertz Absorber/Sensor Using Multi-layered Graphite', 12th International Conference on Computing, Communication and Sensor Networks, Organized by Applied Computer Technology, Kolkata, India.
- [2].**Anil Kumar Soni**, Ranjeet Kumar, and Shrawan Kumar Patel, 2019, 'Development of image fusion methodology for image enhancement of sub-surface defect in eddy current non-destructive testing', International conference on Advances in steel, Power and construction Technology, Raigarh.
- [3].Ranjeet Kumar, **Anil Kumar Soni**, and B. Ramachandra Reddy, 2019 'Analysis of Histogram-based Image Enhancement Techniques for Steel Surface and Defects Images', International conference on Advances in steel, Power and construction Technology, Raigarh.
- [4].**Anil Kumar Soni**, S Shuaib Ahmed, S. Thirunavukkarasu, B P C Rao and T Jayakumar, 2013, 'Multi-Sensor Image Fusion for Enhanced Detection of Sub-Surface Defects by Eddy Current Testing', 14th Asia Pacific conference on Non-destructive Testing, Mumbai.
- [5].**Anil Kumar Soni**, B P C Rao, B. Sasi, Saji Jacob George, T Jayakumar, 2013, 'Development of a Low Frequency Eddy Current Instrument for Non-destructive Evaluation', National Symposium on Instrumentation (NSI-38), Hubli.

- [6]. **Anil Kumar Soni**, C.S. Angani, K. Sambasiva Rao, Jaskaran Singh Grover, S. Thirunavukkarasu, B.P.C. Rao, T. Jayakumar, 2012, 'Development of Pulsed Eddy Current System and Model Based Optimization', National Seminar on NDE-2012, New Delhi.

### UGC Listed Journal and Other Publications:

- [1]. **Anil Kumar Soni\***, Aradhana Soni, Chandan Tamrakar, Shrawan Kumar Patel, and Amit Kumar Dewangan 'Development of Reitnex Method based Dehazing algorithm for image enhancement', Chhattisgarh Journal of Science and Technology, Vol. -19 (4), pp. 515-521, 2022.
- [2]. Aradhana Soni, Chandan Tamrakar, **Anil Kumar Soni**, Shrawan Kumar Patel, Satish Kumar Negi and Amit Kumar Dewangan 'An Encryption Algorithm by Integrating Scan Plans, 1D Logistic Sequences, and DNA Encoding', Chhattisgarh Journal of Science and Technology, Vol. -19 (4), pp. 511-514, 2022.
- [3]. Dharmendra Kaushik, Alok Kumar Singh Kushwaha, **Anil Kumar Soni**, Aradhana Soni 'A Review on Person Identification Techniques Based on Iris Images', Chhattisgarh Journal of Science and Technology, Vol. -19 (4), pp. 399-411, 2022.
- [4]. Aradhana Soni, Chandan Tamrakar, **Anil Kumar Soni**, Amit Kumar Dewangan and Satish Kumar Negi, 'Fractional Calculus-Based Hybrid Approach for Image Encryption', Chhattisgarh Journal of Science and Technology, Vol. -18 (1), pp. 38-42, 2021.
- [5]. Shrawan Kumar Patel, **Anil Kumar Soni** and, Chandan Tamrakar, 'Scenario-based Performance Analysis of Dynamic Routing Protocol using Cisco Packet Tracer', Chhattisgarh Journal of Science and Technology, Vol. -18 (1), pp. 216-219, 2021.
- [6]. Shrawan Kumar Patel, **Anil Kumar Soni**, and Chandan Tamrakar, 'Performance Analysis of SAR Reduction in PIFA using Electromagnetic Band Gap (EBG) Structures', Chhattisgarh Journal of Science and Technology, Vol. -18 (1), pp. 201-204, 2021.
- [7]. Chandan Tamrakar, **Anil Kumar Soni**, Shrawan Kumar Patel, and Aradhana Soni, 'Enhancing ECG Signal Analysis through Wavelet Transform-Based Denoising Techniques: A Comparative Study', Chhattisgarh Journal of Science and Technology, Vol. -18 (1), pp. 12-17, 2021.
- [8]. S. Thirunavukkarasu, B.P.C. Rao, **Anil Kumar Soni**, S. Shuaib Ahmed, T. Jayakumar, 'Comparative performance of image fusion methodologies in eddy current testing', Research Journal of Applied Sciences, Engineering and Technology, Vol. 4, No 24, pp. 5548-5551, 2012.

## Research Supervision

### No. of Ph.D. students/research scholar:

- **Ph. D Scholar:** 04 (Ongoing)
- **M. Tech. Scholar:** 01 (Completed).

## Administrative Responsibilities

### Current Activity

- **Member of Industries Alumni Advisory Board (IAAB)**, Department of ECE, Madanapalle Institute of Technology and Science, Madanapalle, 2023.
- **NBA Coordinator** for Department of ECE in SoS (E&T), GGV Bilaspur
- **Member** of MOOC's implementation committee, GGV Bilaspur
- **Member** of Indian Society for Technical Education (ISTE)
- **Website Coordinator** for Department of ECE in SoS (E&T), GGV Bilaspur
- **Member of NAAC Committee** for Department of ECE in SoS (E&T), GGV Bilaspur
- **IEEE Students branch councilor** for IEEE Students Branch GGV Bilaspur from February 2023.
- **Silicon Club Coordinator** for Department of ECE in SoS (E&T), GGV Bilaspur

### Past Activity

- **Assistant Director** for Internal Quality Assurance Cell (IQAC), GGV Bilaspur
- **NAAC Coordinator (criteria-4)** GGV Bilaspur from 2021 to 2024.
- **M.Tech. Coordinator** for Department of ECE in SoS (E&T), GGV Bilaspur for academic session 2023-24 and 2024-25.
- **Faculty Representative from SoS (E&T) (Member)** for skill development cell (SDC) GGV Bilaspur from 2020 to 2023.
- **Newsletter Faculty Coordinator** for Department of ECE in SoS (E&T), GGV Bilaspur.
- **Module Admin / Owner** for ERP Samarth System at GGV Bilaspur
- **Member** of NEP taskforce, GGV Bilaspur
- **1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> Year Coordinator** for Department of ECE in SoS (E&T), GGV Bilaspur for A.Y. 2020-21, 2021-22, 2022-23 and 2023-24.
- **Web/ Design Team Lead** in Newsletter (In the Loop) IEEE Bombay Section from July 2020 to December 2021.
- **Research Coordinator** for Department of ECE in SoS (E&T), GGV Bilaspur
- **NBA Coordinator** for Department of ECE in MITS Madanapalle
- **NAAC Coordinator (criteria-1)** for Department of ECE in MITS Madanapalle
- **Program Co-coordinator** for AICTE sponsored two-week FDP on embedded with wireless for IoT
- **Newsletter Coordinator** for Department of ECE in MITS Madanapalle

## Additional Information

### Guest Lectures/Chair Person

- **Guest Lecture** in B.Tech. Students Induction program 2024-25 organized by School of Studies Engineering and Technology, Guru Ghasidas Vishwavidyalaya Bilaspur dated August 23, 2024.
- **Guest Lecture** in B.Tech. Students Induction program 2023-24 organized by School of Studies Engineering and Technology, Guru Ghasidas Vishwavidyalaya Bilaspur dated September 20, 2023.
- **Guest Lecture** in B.Tech. Students Induction program 2022-23 organized by School of Studies Engineering and Technology, Guru Ghasidas Vishwavidyalaya Bilaspur dated December 7, 2022.
- **Guest Lecture** in AICTE-CSVTU MoU One Week Joint Teachers Training Program (TTP-2021) jointly organized by Chhattisgarh Swami Vivekanand Technical University Bhilai and Lakhmi Chand Institute of Technology, Bilaspur dated March 22, 2022.
- **Chair Person** for Technical Session in International conference on Machine Vision and Augmented Intelligence (MAI-2022), organized by National institute of Technology Jamshedpur during March 04-06, 2022
- **Guest Lecture** in B.Tech. Students Induction program 2021-22 organized by School of Studies Engineering and Technology, Guru Ghasidas Vishwavidyalaya Bilaspur dated December 23, 2021.
- **Guest Lecture** in one day webinar on “Image Processing and Applications with MATLAB” organized by Lakhmi Chand Institute of Technology, Bilaspur dated April 3, 2021.
- **Chair Person** for Technical Session (Deep Learning: Theory and Application) in International conference on Machine Vision and Augmented Intelligence (MAI-2021) organized by Indian Institute of Information Technology, Design and Manufacturing, Jabalpur during February 11-14, 2021

### Event Organized

- **One day webinar** on Art of Writing Research Paper, November 7, 2020 at School of Studies Engineering and Technology, Guru Ghasidas Vishwavidyalaya Bilaspur.
- **One week online seminar series** on "Current Trends in Engineering Projects" jointly organized by Skill Development Cell and Department of Electronics & Communication Engineering, School of Studies in Engineering and Technology, Guru Ghasidas Vishwavidyalaya Bilaspur Chhattisgarh during November 25-29, 2020.
- **One week online Workshop** on "Skill Development for Technology Transfer (SDTT-2021)" jointly organized by Research & Development Cell, SoS (E&T) and Skill Development Cell, Guru Ghasidas Vishwavidyalaya Bilaspur during September 13-18, 2021.
- **One week online Workshop** on “Scheme for Facilitation Intellectual Property Protection (SFIPP-2021)” jointly organized by Research & Development Cell, SoS



(E&T) and Skill Development Cell, Guru Ghasidas Vishwavidyalaya Bilaspur during October 18-23, 2021.

### Academic Identity

- **Web of Science ResearcherID:** J-9379-2018
- **Orcid Id:** 0000-0003-1612-6161
- **Scopus Id:** 55497653400

### Journal/Conference Paper Reviewer

- **Measurement**, Elsevier.
- **IET image processing**, IET (IEEE) Journals,
- **Journal of Testing and Evaluation**, ASTM International.
- **Insight - Non-Destructive Testing & Condition Monitoring**, The British Institute of Non-Destructive Testing.
- **Sensing and Imaging**, Springer.
- **SN Computer Science**, Springer.
- International conference on Machine Vision and Augmented Intelligence (MAI-2021 and MAI 2022)
- 4th International Conference on Machine Intelligence and Signal Processing (MISP2022)
- International Conference on Advancements in Interdisciplinary Research, Theme: Smart and Sustainable Society (AIR 2022)
- 5th International Conference on "Advances in Steel, Power and Construction Technology (ICASPCT-2022)



(Dr. Anil Kumar Soni)