



Dr. Subrata Maiti

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Education:

- 2011 – 2016 PhD, Dissertation: Analytical Modelling of Ultra-Wide Band Ground Penetrating Radar for Characterization of Subsurface Media
[National Institute of Technology, Rourkela](#)
- 2000 – 2002 M.Tech in Microwave Engineering.
[Indian Institute of Technology, Kanpur](#)
- 1996 – 2000 B.E in Electronics and Communication Engineering
[National Institute of Technology, Durgapur](#)

Principle Areas of Interest:

- Ground penetrating radar (GPR) system analysis, modelling, and design.
- Imaging, Detection, and classifications of buried objects by UWB Radar
- Radar signal Processing for novel waveform design, object detection, tracking, identification, high resolution imaging.

Key Publications:

- 1) S. L. Panda, U. K. Sahoo, S. Maiti and P. Sasmal, "An Attention U-Net Based Improved Clutter Suppression in GPR Images" in IEEE Transactions on Instrumentation & Measurement, 2024. (Accepted)
- 2) B. S. Kumar, A. K. Sahoo and S. Maiti, "Integrated Feature Investigation and Classification Methods for Discrimination of Subsurface Objects in GPR Imagery," IEEE Sensors Journal, 2024 doi: 10.1109/JSEN.2024.3368749
- 3) Rohit Kumar Karnena and Subrata Maiti. "An Efficient Full Wave Model for Investigating Layered Media Using Bi-static Ground Penetrating Radar." *IEEE Transactions on Antennas and Propagation* (2023).
- 4) Mishra, Abhijit, Upendra Kumar Sahoo, and Subrata Maiti. "Robust Structured Sparsity Based Fused Lasso Estimator With Sensor Position Uncertainty." *IEEE Transactions on Circuits and Systems II: Express Briefs* (2023).
- 5) Mishra, Abhijit, Upendra Kumar Sahoo, and Subrata Maiti. "Second-order Fused Lasso Algorithm for Radio Tomographic Imaging." *IEEE Communications Letters* (2023).
- 6) Mishra, Abhijit, Upendra Kumar Sahoo, and Subrata Maity. "Sparsity promoting decentralized learning strategies for radio tomographic imaging using consensus based ADMM approach." *Journal of the Franklin Institute* 360.7 (2023): 5211-5241.

- 7) Mishra, Abhijit, Upendra Kumar Sahoo, and Subrata Maiti. "Robust radio tomographic imaging for localization of targets under uncertain sensor location scenario." *Digital Signal Processing* 137 (2023): 104030.
- 8) S.L. Panda, S. Maiti, and U.K. Sahoo, "A Review of Subsurface Propagation Velocity Estimation Methods in GPR" *IEEE Geoscience and Remote Sensing Magazine*, 2022
- 9) Abhijit Mishra, Upendra Kumar Sahoo, and Subrata Maiti. "Sparsity-enabled radio tomographic imaging using quantized received signal strength observations". *Digital Signal Processing*. 2022. <https://doi.org/10.1016/j.dsp.2022.103576>
- 10) Swarna Laxmi Panda, Subrata Maiti, U. K. Sahoo, "Time reversal imaging based surface velocity estimation", *Proceeding of the 14th SEGJ International Symposium*, 2021.
- 11) Nayak, Rashmiranjan, and Subrata Maiti. "A review of Bow-Tie antennas for GPR applications." *IETE Technical Review* (2018).
- 12) Subrata Maiti, Sarat Kumar Patra, and Amitabha Bhattacharya. "A Modified Plane Wave Model for Fast and Accurate Characterization of Layered Media." *IEEE Transactions on Microwave Theory and Techniques*, Vol. 65.9, 3492-3502, 2017.

Research Project:

| Project Title | Sponsoring Agency Name | Duration | Date of Approval of Project | Current Status | Amount (INR) | Role |
|---|------------------------|----------|-------------------------------|----------------|---|-------|
| Consequence analysis and risk assessment for Radiation hazards | ITR Chandipur, DRDO | 3Yrs | Nov 2012 | Completed | 920000/- (Nine lakh Twenty thousands) | Co-PI |
| Development of Ground Penetrating Radar for Detection of Subsurface Objects | SERB (IMPRINT-II) | 3Yrs | 7 th March 2019 | Completed | 10141120/- (One Crore One Lakh Forty-One Thousand One Hundred and Twenty Rupees) | PI |
| Reduction of Radar Cross Section (RCS) using Metamaterial for Security Application | SERB | 3Yrs | 8 th February 2023 | Ongoing | 2549000/= (Twenty-five lakh forty nine thousand) | Co-PI |

Academic and Research Experience:

1. Assistant Professor at NIT Rourkela from July, 2011 till date
2. Senior Hardware Engineer at Kyocera Wireless India Pvt. Ltd from 2005 to 2007
3. Research Engineer at Center for Development of Telematics from 2002 to 2005

Courses Taught:

- PG: Digital communication, Microwave engineering, Computational techniques in electromagnetics, Digital Signal Processing
- UG: Basic electronics, Digital signal processing, Electromagnetic theory
- Lab: Product development laboratory, Radar system design and modelling, etc.

Lab Developments:

An indoor testing facility for SFCW ground penetrating radar testing has been developed with help of vector network analyzer (VNA), TEM horn antenna and manual scanner. The setup is capable of testing properties of sand, water and simulating scenario like detection of buried object etc.



Figure 1: GPR Laboratory at NITR

Awards and Achievements:

- Award from C-DOT on 2005 for excellent performance on year 2004
- Award and Certificate of honor presented by Kyocera Wireless India Pvt Ltd on Year 2007