

**IEEE GEOSCIENCE & REMOTE SENSING SOCIETY STUDENT BRANCH  
CHAPTER**

**NETAJI SUBHASH ENGINEERING COLLEGE**

## **One Day National Workshop on Remote Sensing & Applications**

A one day National workshop on Remote Sensing and Application (RSA 2017) organized by IEEE GRSS Kolkata Chapter in association with the department of ECE on 7 September 2017. Prof. Koushik Dutta explained the theories and physics behind antenna radiation. Dr. Saurabh Das spoke about big data and how can it be used for huge climatic data. Prof. Abhirup Das Barman talked about 4G mobile systems. Few new technologies have been introduced in 4G. He discussed the physical layer issues of OFDM based LTE-4G downlink air interface. Future challenges of spectrum scarcity and its mitigation techniques had also been discussed. Characteristics of cellular network for future 5G highlighted. In second half a student paper contest was held. Seven students of different colleges (ISI, Kolkata, Netaji Subhash Engineering College, GuruNanak Institute of Technology, JIS group, Kalyani) present their paper on various topics.



Prof. Maitra and Prof. Umashankar with our  
Director and Principal



Convener giving certificate to the  
student

**IEEE Geoscience and Remote Sensing society (GRSS) Distinguished Lecture on  
“Statistical Information Theory and Geometry for Synthetic Aperture Radar (SAR)  
Image Analysis”**

Synthetic Aperture Radar (SAR) and Polarimetric SAR (PolSAR) sensors have been successfully used in remote sensing (Lee & Pottier 2009). SAR and PolSAR systems can provide images with high spatial resolution but contaminated by an interference pattern, called speckle. Speckle shows individual behavior which makes SAR image analysis harder. Prof. Frery proposed Multiplicative model instead of assuming additivity as the standard method of image processing. In multiplicative model, the observed image  $Z$  is the product of two independent fields: the backscatter  $X$  and the speckle  $Y$ . The result of any speckle filter is  $X^\wedge$ , an estimator of the backscatter  $X$ , based solely on the observed data  $Z$ . An ideal estimator would be the one for which the ratio of the observed image to the filtered one  $I = Z/X^\wedge$  is only speckle: a collection of independent identically distributed samples from Gamma variates. We, then, assess the quality of a filter by the closeness of  $I$  to the hypothesis that it is adherent to the statistical properties of pure speckle. The rationale behind this proposal is measuring the distance between two samples for comparing them. He also discussed the gamma random model for intensity data. He concluded that Information Theory and Information Geometry, along with Statistics, provide useful tool for solving many image analysis problems. This is a fertile area for scientific research and technology development.



Prof. Frery delivering his lecture



ECE department group photo with Prof. Frery

## **One Day Seminar On FUNDAMENTALS OF RADIO WAVE PROPAGATION**

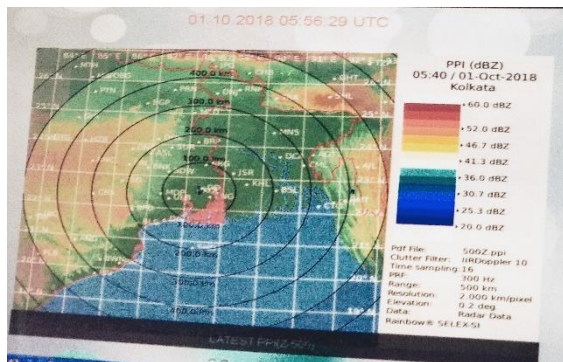
On August 24, 2018 the GRSS NSEC Student Branch Chapter in association with the department of ECE organized a technical lecture on “**Fundamentals of Radio wave Propagation**” at the APC Hall, NSEC from 4 pm to 5 pm. **Prof. Animesh Maitra**, Institute of Radio physics and Electronics, University of Calcutta dealt with Radio wave principles and fundamentals. He addressed various aspects of the topic including the challenges, solutions and approaches. He briefly introduced topics like Hertz’s Experiment, Rain Attenuation, Satellite based Broadband Services, SATCOM Applications. Almost 70 students showed up their interest along with 14 IEEE members.



Animesh with the faculty members and students

## An Educational Visit to Doppler Weather Radar, Regional Meteorological Centre, Kolkata

IEEE Geoscience and Remote Sensing Society Student Branch Chapter of Netaji Subhash Engineering College, Garia organized one educational visit to Doppler Weather Radar, New Secretariat Building, Kolkata on 9 January 2019. 15 students along with one Faculty member (Prof. Arijit De) of ECE Department visited the radar facility. Indian Meteorological Department (IMD) has installed four Doppler weather radars along the east coast of India for monitoring and forecasting the Bay of Bengal cyclones. The radar works on the principle of Doppler shift. It has two scan scheduler, namely lower elevation scan ( $0.2^{\circ}$ - $1^{\circ}$ ) and volume scan ( $0.2^{\circ}$ - $21^{\circ}$ ). The hardware part consists of an antenna control unit and a pressure unit. A certain frequency is transmitted and is received by a dish antenna. From this backscattered power raw data are generated. Radar reflectivity, wind direction, wind speed and rain intensity are the major products. Radar reflectivity, (measured in dB) detects the cloud (stronger reflectivity means higher cloud intensity). Height profile of wind speed and wind direction gives the idea about turbulent atmosphere and from which direction the wind is coming. Rain intensity (mm/h) gives the intensity of rain.



Radar reflectivity on 9 January, 2019



Rooftop of the radar site



Students at the site

A Educational visit to BOSE Institute, Kolkata

**Jagdish Chandra Bose (1858-1937)**

Born 30 November 1858 (Mymensingh, Bangladesh)

Died 23 November 1937;

D.Sc. (1896), University of London, UK

Specialization:

Optics, Electromagnetic Radiation,

Plant Physiology

**IEEE Geoscience and Remote Sensing Society Student Branch Chapter** of Netaji Subhash Engineering College, Garia organized one educational visit to Bose Institute Main Campus, Razabazar, Kolkata on 15 February 2019. 13 students along with two Faculty members (Prof. Arijit De and Mr. Tapas Kr. Dawn) of ECE Department visited the Institute. Sir Jagadish Chandra Bose is one of the most prominent first Indian scientists who contributed in many branches of Science (Optics, Electromagnetics, Plant Physiology). We visited the Museum and we have seen the class notes used by Sir J. C. Bose, the research articles published by sir J. C. Bose. Students also enlightened by seeing the instrumental facility used by Sir J. C. Bose for generation of Microwave and Wireless Communication.

Sir J.C. Bose did his original scientific work in the area of Microwaves. He made his own equipment by employing an illiterate tin-smith whom he trained up to do the job for him. He produced extremely short waves and done considerable improvement upon Hertz's detector of electric waves. Hertz had used a wavelength of 66 cm; however Prof. Bose in Calcutta was performing experiments at wavelengths as short as 5 and 6 mm. In 1894, J.C. Bose converted a small enclosure adjoining a bathroom in the Presidency College into a laboratory. He carried out experiments involving refraction, diffraction and polarization. To receive the radiation, he used a variety of different junctions connected to a highly sensitive galvanometer. He plotted in detail the voltage-current characteristics of his junctions, noting their non-linear characteristics. He developed the use of galena crystals for making receivers, both for short wavelength radio waves and for white and ultraviolet light. Patent rights for their use in detecting electromagnetic radiation were granted to him in 1904. Some photos of the visit has given below:



At Lecture Room of Bose Institute, Kolkata



At Museum of Bose Institute, Kolkata



Apparatus used by Sir J. C. Bose



Materials used by Sir J. C. Bose

## **One Day Technical Lecture on MEMS : A future roadmap for mmW and sub-mmW Technologies**

On 19 March, 2019 the GRSS NSEC Student Branch Chapter in association with the department of ECE organized a technical lecture on “**MEMS : A future roadmap for mmW and sub-mmW Technologies**” at the Seminar room, ECE Dept., NSEC from 2 pm to 3:30 pm. **Mr. Ayan Karmakar**, Scientist, SCL, ISRO, Chandigarh delivered the lecture on various applications of MEMS.

Abstract of the talk: Micro-electro Mechanical System (MEMS) is an agglomeration of sub-micron mechanical moving parts and electronic components on a single module. MEMS devices operated at Radio Frequency (RF) is emerging as a propitious technology. In the millimeter and sub-millimeter wave technology, this MEMS can be a major player in future. Lots of passive communication building blocks of the system can be realized utilizing this upcoming technology. Starting from the basic blocks to system level approach can be adopted with MEMS. In microwave remote sensing applications, there is also a lot of scope in terms of antenna engineering or filter, oscillator, switching matrix or phased array antenna system realization. In this talk, the speaker will cover the basic understanding of this technology in context with RF/microwave engineering and then its applied parts. 15 Students along with three faculty members were present in the event.



Prof. Dutta giving a gift to the speaker



Group photo with Mr. Karmakar

## Paper accepted in IGARSS 2019

Basic HTML view

Conversation opened. 2 messages. All messages read.

[Skip to content](#)

[Using Gmail with screen readers](#)

You're out of storage space and will soon be unable to send or receive emails until you [free up space](#) or [purchase additional storage](#). Changes to your storage space may take up to 24 hours to update.



## Search

15 of about 55



**IGARSS 2019 Notifications** <papers@igarss2019.org>

Apr 6, 2019,  
12:06 AM

to sidclarke14, me

Dear **NEEL SARKAR, ARIJIT DE,**

The IGARSS 2019 Technical Program Committee has completed the review process, and we are pleased to inform you that your manuscript

#1899, titled 'LATITUDINAL VARIATION OF CLOUD EFFECTIVE RADIUS AND AEROSOL OPTICAL DEPTH FROM MODIS DATA'

has been ACCEPTED for inclusion as a poster presentation in the IGARSS 2019 program.

Congratulations! What should you do now?

**One day Technical talk on “Remote Sensing of Atmospheric parameters”  
By Prof. Barun Raychaudhuri**

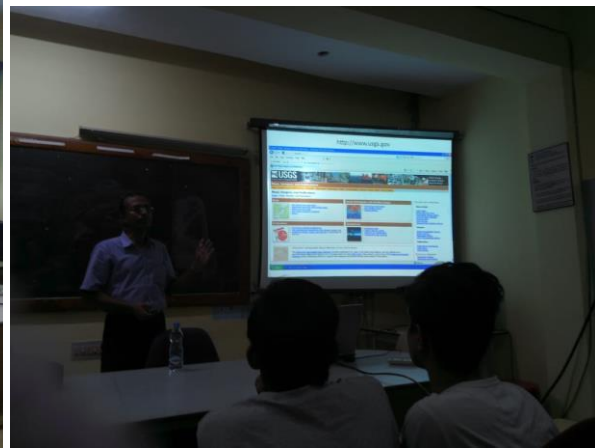
Head of Physics Department, Presidency University

The presentation is mainly intended for making the students interested in the physical principles and applications of ‘remote sensing’, *i.e.*, the science and technology of detecting the interaction of electromagnetic radiation with earth surface and atmosphere and acquiring information on natural resources, environment and human activity. It is a wide field of work incorporating conventional and interdisciplinary subject areas and of diversified applications in forecasting agricultural output and climatic conditions, estimating land cover and use, monitoring natural resources and human activities and many others.

This talk is more concentrated on the remote sensing of aerosols and atmospheric trace gases, such as carbon dioxide. The importance of such topics, the present scientific and technical needs and the present activities including that of Indian context are highlighted. The first portion of the presentation consists of the fundamentals of remote sensing, such as the concept of spectral signature, radiometric quantities and related laws, ideas on satellite-borne sensors, deriving information from satellite images and related software. Then specific information and discussions on atmospheric sensing are presented. The sensing of two important atmospheric parameters, namely aerosols and carbon dioxide (the most significant anthropogenic greenhouse gas) are illustrated with the data obtained from ISRO. Some open data sources and public domain coding systems are introduced to encourage the students so that they can do some work on their own.



Speaker with the participants



Prof. Raychaudhuri delivering his lecture

# Report on the Faculty Development Program/ Summer School

on

## Wave Propagation and Remote Sensing (WPRS 2019)

Arijit De

A one week Faculty Development program cum Summer School on Wave Propagation and Remote Sensing (WPRS 2019) organized by IEEE GRSS Student Branch Chapter, NSEC, Kolkata in association with the department of ECE and IEEE AP/MTT Kolkata Chapter from 14 July- 20 July 2019. Wave Propagation & Remote Sensing (WPRS) 2019 was an intensive week-long school organized for the first time by the IEEE GRSS SBC of Netaji Subhash Engineering College. The aim of this two-credit equivalent certificate course is to train, educate and appraise students, research scholars, and professionals from academic institutes, industries and other sectors in the field of microwave remote sensing, radar engineering and big data analysis. Remote Sensing is an emerging technology having a very wide range of applications. It can be combined with other engineering aspects like satellite communication, signal processing, communication, machine learning, big data analysis etc.

Prof. Manojit Mitra, from IEST, Shibpur explained the very basic of Electromagnetic and Wave Propagation Engineering. Dr. Satyajit Chakrabarty, Scientist, SAMEER, Kolkata explained to the audience about various antennas and their characteristics used in the practical field. Prof. Ashik Paul, University of Calcutta enlightened us about the Satellite Communication. He also showed us the basic receiver to receive the satellite signal. Prof. Gopa Sen, Head, IRPEL, University of Calcutta taught us RADAR Engineering. In the next session, Prof. Barun Raychaudhuri, Presidency University talked about the Optical remote sensing. He also demonstrated us about the MODIS satellite data and ENVI software for remote sensing. In next day, Prof. Animesh Maitra, University of Calcutta explained the history of Remote Sensing and how it started in Kolkata. Then he talked about various aspects of atmospheric remote sensing. He also discussed the future scopes and funding areas of Remote Sensing and Propagation. Dr. Saurabh Das, Assistant Professor, IIT Indore spoke about the use of Machine Learning in remote sensing. He also discussed about the scope of big data analysis in the field of remote sensing. He also demonstrated WEKA software which is a basic tool for Machine Learning.

The school focused upon exploring new avenues with latest advances in the field of remote sensing, radar, and big data through lectures by eminent scientists and researchers. The essence

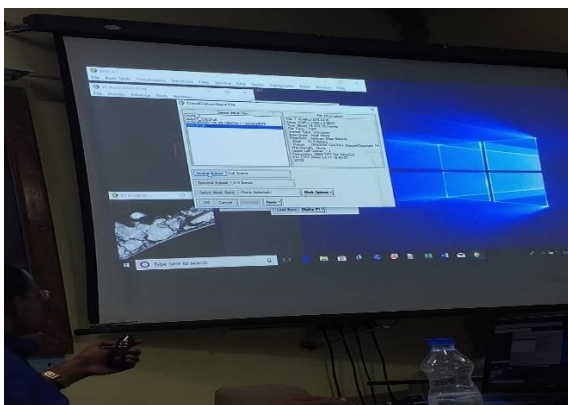
of the academic interaction would be different from a conventional workshop or conference. 10 students along with 25 Faculty members showed their interest to attend this event.



Inauguration day



Convenor giving a gift to Prof. Ashik Paul



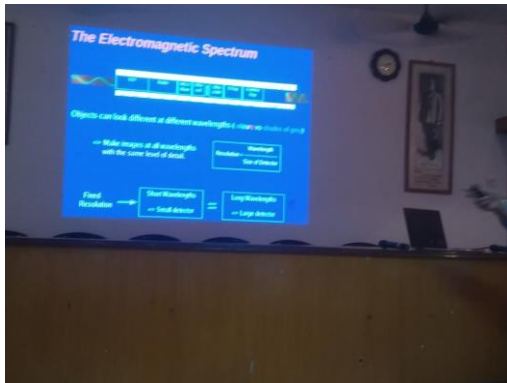
Explanation about WEKA tool



Prof. Maitra with the participants

## A technical talk on “Remote Sensing, Cosmology and Chandrayan-II’ by Prof. Abhirup Datta, IIT Indore

Prof. Abhirup Datta explained about Cosmology. He also shared information regarding Chandrayan-II. More than 50 students along with Faculty members attended the lecture.



Prof. Datta giving his lecture



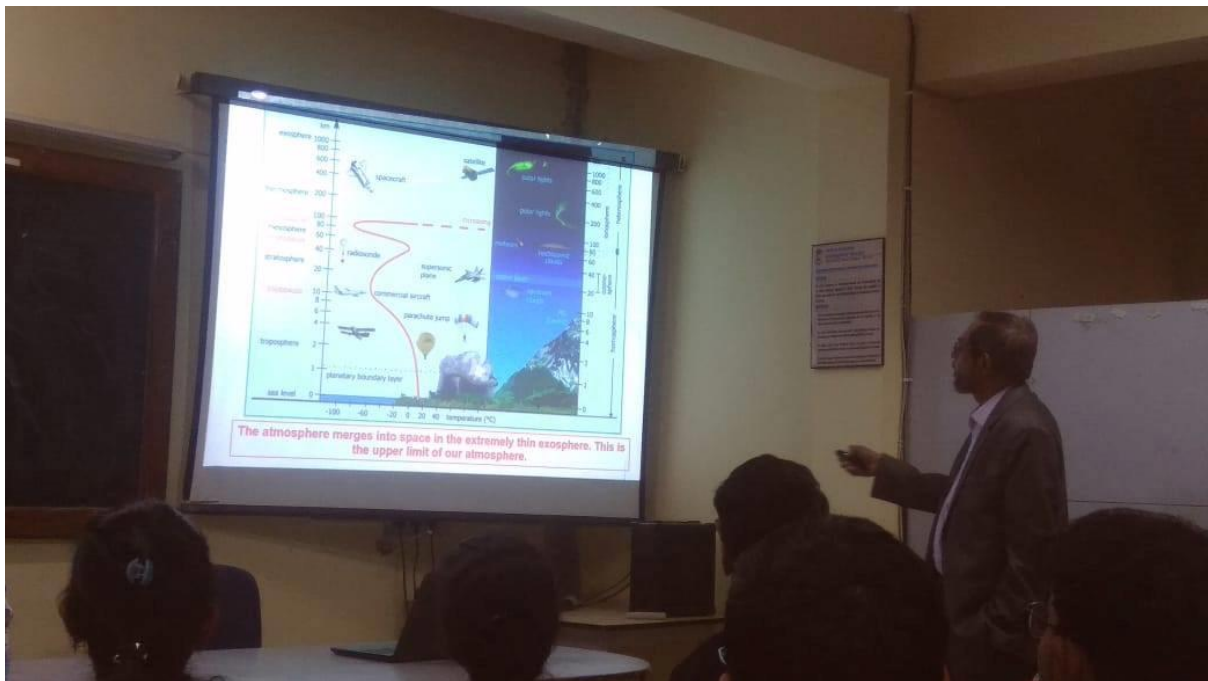
Our HOD giving a gift to the speaker

**A technical talk on “Revolution in society through satellite’ by Prof. P.  
Banerjee, Visiting Faculty, Physics Department,  
Burdwan University, Burdwan**

Dr. P Banerjee delivered his lecture on the topic of basic of satellite communication, applications of satellite communication and remote sensing. He gave information about space trash also. His lecture was very informative. Around 30 students were present in his lecture.

**A technical talk on “Revolution in society through satellite’ by Prof. P. Banerjee, Visiting Faculty, Physics Department, Burdwan University, Burdwan**

Dr. P Banerjee delivered his lecture on the topic of basic of satellite communication, applications of satellite communication and remote sensing. He gave information about space trash also. His lecture was very informative. Around 30 students were present in his lecture.



Dr. P Banerjee delivering his lecture

**A technical talk on “Machine Learning by” by Prof. Ashish Ghosh, ISI, Kolkata**

Prof. Ghosh delivered the basic of machine learning and the various type of learning with examples. Around 15 students were present in his lecture.



Prof. Ghosh delivering his lecture



Our Head sir giving a gift to Prof. Ghosh

