



Two Days Workshop on

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**Advances in Electronics & Communication**

**March 14 - 15, 2017**

**Organised By:**

**Department of Electronics and Communication Engineering**

And

**Department of Computer Science and Engineering**

Rajiv Gandhi University (RGU), Arunachal Pradesh  
(A central University)  
Rono Hills (Itanagar) 791112  
Arunachal Pradesh

Report Date: 16/03/2017

Department of Electronics and Communication Engineering And Department of Computer Science and Engineering, Rajiv Gandhi University organized a Free Workshop on **“on Advances in Electronics & Communication”** for faculty members and research scholars On March 14 - 15, 2017.

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# ORGANIZING COMMITTEE

**CHIEF PATRON**  
**Prof. Tomo Mibang**  
Hon'ble Vice-Chancellor, RGU

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## Registrar

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6. Mr. Kurmendra
7. Ms. Bomken Kamdak Bam
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9. Mr. Satish Kumar Das
10. Mr. Bhaskar Jyoti C

## ***ACKNOWLEDGEMENT***

I have immense pleasure in expressing my heartfelt gratitude to a number of individuals and institutions for their incessant assistance and encouragement during this Workshop on **“Advances in Electronics & Communication”**. At the very outset I owe a deep sense of gratitude to Chief Patron of this Workshop, Prof. Tomo Mibang Hon'ble Vice-Chancellor, RGU. I remain indebted to him for the discussions I had with him, his resourceful advice, useful suggestions and unflagging enthusiasm at every turn of this work. I am thankful to Patron of this Workshop, Prof. Rachob Taba, Registrar, RGU giving approval for this Workshop. I express my gratitude to the Patron of this Workshop, Prof. Amitava Mitra, in completing the procedures with Faculty Development Programme. I am grateful to Ms. Champa Tanga, Assistant Professor and convener of this Workshop, Department of Electronics and Communication Engineering, RGU, for her encouragement and help. Thanks are also due to other members of the teaching faculty, and the members of the staff in the office of the Dept. Of Computer Science and Engineering and Department of Electronics and Communication Engineering, RGU.

**Mr. Firos A, Secretary of Workshop**

## EXECUTIVE SUMMARY

Department of Electronics and Communication Engineering and Department of Computer Science and Engineering, Rajiv Gandhi University organized a Free Workshop on “**Advances in Electronics & Communication**”. A Workshop on “**Advances in Electronics & Communication**” was organised at Rajiv Gandhi University, Arunachal Pradesh with an objective to provide the faculty with an understanding of Advances in Electronics & Communication. Department of Electronics and Communication Engineering and Department of Computer Science and Engineering, Rajiv Gandhi University organized the Workshop from 14-15 March 2020. Eminent resource person from the field of Artificial intelligence handled technical session.

There are many people who contributed a lot for organizing the programme successfully. I express my sincere gratitude to each and every one who made this programme a success. First of all, I would like to thank Hon'ble Vice Chancellor of Rajiv Gandhi University for allowing us to organize this significant programme. I take this privilege to express my cordial appreciation to all the Resource Person for giving his valuable time and sharing their wisdom through their course material during the Workshop. I thank all the participants for actively participating in the programme. Last but not least I express thanks to my colleagues and students for their continuous and positive support. It was a well organized training with a lot of inputs provided and the sessions were very informative. There were many topics covered during the program and I hope the shared course materials could Spark some Interest and Ignite a Passion to learn more about it. The details of the technical sessions are provided in detail in this report.

Thanking you.

**Mr. Firos A**  
**Secretary of Workshop,**  
**Department of Computer Science and Engineering,**  
**Rajiv Gandhi University (A Central University),**  
**Rono Hills, Doimukh – 791112**  
**Arunachal Pradesh, India**

## **1. PREFACE**

### **1.1. ABOUT HOST INSTITUTION**

#### **1.1.1. Rajiv Gandhi University**

Rajiv Gandhi University (formerly Arunachal University) is the premier institution for higher education in the state of Arunachal Pradesh and has completed twenty five years of its existence. RGU is ranked among top 100 Universities in India (as per NIRF ranking). Late Smt. Indira Gandhi, the then Prime Minister of India, laid the foundation stone of the university on 4th February 1984 at Rono Hills, where the present campus is located. Ever since its inception, the university has been trying to achieve excellence and fulfill the objectives as envisaged in the University Act. The University got academic recognition under section 2(f) from the University Grants Commission on 28th March, 1985 and started functioning from 1st April, 1985. It got financial recognition under section 12-B of the UGC on 25th March, 1994. Since then Rajiv Gandhi University then Arunachal University has carved a niche for itself in the educational scenario of the country following its selection as a University with potential for excellence by a high level expert committee of University Grants Commission from among universities in India. The University was converted into a Central University with effect from 9th April 2007 as per notification of Ministry of Human Resource Development, Government of India.

The Faculty members have been actively engaged in research activities with financial support from UGC and other funding agencies. Since inception, a number of proposals on research projects have been sanctioned by various funding agencies to the University. Departments have organized a number of Seminars, Workshops and Conferences. Many faculty members participated in national and international conferences and seminars held within the country and abroad. Eminent scholars and distinguished personalities have visited the University and delivered lectures on various disciplines.

The academic year 2000-2001 was a year of consolidation for the University. The switch over from annual to semester system took off smoothly and the performance of the students registered a marked improvement. Various syllabi designed by Boards of Post-Graduate Studies (BPGS) have been implemented. VSAT facility installed by the ERNET India, New Delhi under UGC-Infonet program, provides internet access.

In spite of infrastructural constraints, the University has been maintaining its academic excellence. The University has strictly adhered to the academic calendar, conducted the examinations and declared the results in time. The students from the University have found placements not only in State and Central Government Services, but also in various institutions, industries and organizations. Many students have come out successful in the National Eligibility Test (NET). Since inception; the University has made significant

progress in teaching, research, innovations in curriculum development and developing infrastructure.

### **1.1.2. Department of Electronics and Communication Engineering**

The Department of Electronics and Communication Engineering was established in 2017, with a MTech in Electronics and Communication Engineering.

### **1.1.3. Department of Computer Science & Engineering**

The Department of Computer Science and Engineering was established in 2005, with a diploma course of one-year duration, and a three-year undergraduate course, Bachelor of Computer Applications (BCA). The first and second batch of the BCA programme has completed and the third batch has started from the session 2008-2009, starting from July, 2008. In the year 2006 the Master of Technology in Computer Science and Engineering was started in the department. The department has started the Master of Computer Application course from the session 2013-14.

## **1.2. ABOUT THE SPONSORING AGENCY**

The program is fully funded by Rajiv Gandhi University

## **1.3. BACKGROUND**

Through this industry associated Workshop, we tried to build the next generation of technology developers and participants to achieve the practical knowledge from Big data experts. This workshop helped people unfamiliar with data science to put next gear in learning and research.

## **1.4. SIGNIFICANCE AND OBJECTIVES OF THE Workshop**

1. The objectives are to provide the faculty with an understanding of Advances in Electronics & Communication.
2. The learning outcomes include being able to identify MATLAB as research tool and environment commonly used in statistical computing, data analytics and scientific research.
3. MATLAB is one of the most popular tools used by statisticians, data analysts, researchers and marketers to retrieve, clean, analyze, visualize and present data. Due to its expressive syntax and easy-to-use interface, it has grown in popularity in recent years.
4. To bring the participants to the level of depth necessary in the subject matter to achieve the stated objectives.
5. To encourage participation in the National Agenda of knowledge building

6. To introduce the participants with the basics of MATLAB and increasing their interest in MATLAB as research tool and also to provide resources that will support their classroom instruction as well as in their research.

## **1.5. EXPECTED OUTCOMES**

The purpose of this Workshop is to enable the participants to apply the skills learned through various video tutorials and presentation of the Workshop. Participation in this Workshop will enable the participants to learn how to utilize the Machine learning and Deep learning infrastructure in a better and productive way.

This Workshop seeks to bridge the divide between what has traditionally been viewed as the sole objective of Information Technology and what CAN be the triple bottom line for forward-thinking Information Technology: its real application, ease of use, advancements and profit.

## **1.6. THEMES AND SUB-THEMES**

It was a two days Workshop which aimed at providing valuable information to all the faculty of the Departments. The main motive of this programme was to enhance the best techniques of teaching methods in the present day and to update the knowledge of the faculty within special focus on Machine learning and Deep learning.

### **1.6.1. SUB-THEMES**

The success of this faculty development program is due to the peculiar themes of this program:

- **In person.** It was increasingly feasible to create and sustain virtual networks using resources such as videoconferencing and web 2.0 communications, which allowed substantial value in bringing people together to be immersed in a common experience. Personal interactions also allow for informal communication outside the defined schedule that can be valuable to the network-building process.
- **Team-based.** A key element for ensuring success and enhancing sustainability in this Workshop is the participation of teams from institutions, including a range of junior to senior members on each team. The adopted Workshop model has

shown added success and commitment by participants if their home institute provides at least modest resources to help implement what faculty learns.

### **1.7. BUDGET**

The total expenditure made for the workshop is Rs. 103702 (Rupees One Lakh Three Thousand Seven Hundred and Two only)

### **1.8. MODUS OPERANDI**

To encourage participation in the National Agenda of knowledge building.

## 2. SESSION WISE DELIBERATIONS

### Session wise deliberations of two days Workshop on Advances in Electronics & Communication (WAEC-2017) -14<sup>th</sup> and 15<sup>th</sup> March 2017

#### Day1 : 14<sup>th</sup> March 2017

|                 |  |
|-----------------|--|
| 9.00 am onwards | Registration of participants   |
| 09.50AM         | Gathering of participants, scholars ,students  |
| 10.00AM         | Arrival of Chief Guest and Special Guests  |
| 10.10Am         | Welcome Address by Ms. Champa Tanga, Convener, WAEC-2017   |
| 10.20AM         | A few words by Prof. Rachob Taba, The Registrar , RGU  |
| 10.25 AM        | A few word by Prof. Amitav Mitra, The Finance Officer, RGU   |
| 10.30AM         | A few words by Prof. Tamo Mibang, Vice Chancellor, RGU   |
| 10.35 AM        | Vote of Thanks by Mr. Firos A, Secretary , WAEC-2017   |
| 10.40 AM -11AM  | High Tea   |
| 11.00AM - 1 PM  | TECHNICAL SESSION (I): Dr.Kandarpa Kumar Sarma , Associate Professor, Department of Electronics and Communication Technology. Gauhati University<br>Topic: Knowledge aided system design with special reference to Mobile Communication and Speech Processing Applications         |
| 1 PM – 1.45 PM  | <b>LUNCH Break</b>   |
| 2 PM – 3.30 PM  | TECHNICAL SESSION (II) - 2.00 pm to 3.30 pm<br>Mr.Tushar Semwal, Department of Computer Science and Engineering, IIT Guwahati<br>Topic:<br>Part 1: Introduction to Machine Learning/Artificial Intelligence<br>Part 2: Recent Advances in Machine Learning/Artificial Intelligence |

#### Day 2 : 15<sup>th</sup> March 2017

|                    |  |
|--------------------|--|
| 10.00AM            | Welcome address  |
| 10.30AM – 12.30 PM | TECHNICAL SESSION (III): Dr. Aheibam Dinamani Singh<br>Associate Professor, Department of Electronics and Communication Engineering ,NERIST, Nirjuli<br>Topic: Introduction of Wireless Communication<br>Research Trends in Wireless Communication |
| 1 PM – 1.45 PM     | <b>LUNCH Break</b>   |
| 2 PM – 3.30 PM     | TECHNICAL SESSION (II) - 2.00 pm to 3.30 pm<br>Dr.Santanu Maity, Assistant Professor, Department of Electronics and Communication Engineering, NIT, Arunachal Pradesh<br>Topic: Hetero-junction field effect Transistor : Future Research          |
| 3.30 PM            | Valedictory Function   |

## 2.1. **PLENARY SESSIONS**

NA

## 2.2. **TECHNICAL SESSIONS**

|   |  |
|---|--|
| <b>14<sup>th</sup> March 2017</b><br>11.00AM - 1 PM     | TECHNICAL SESSION (I): Dr.Kandarpa Kumar Sarma ,<br>Associate Professor, Department of Electronics and Communication Technology. Gauhati University<br>Topic: Knowledge aided system design with special reference to Mobile Communication and Speech Processing Applications      |
| <b>14<sup>th</sup> March 2017</b><br>2 PM – 3.30 PM     | TECHNICAL SESSION (II) - 2.00 pm to 3.30 pm<br>Mr.Tushar Semwal, Department of Computer Science and Engineering, IIT Guwahati<br>Topic:<br>Part 1: Introduction to Machine Learning/Artificial Intelligence<br>Part 2: Recent Advances in Machine Learning/Artificial Intelligence |
| <b>15<sup>th</sup> March 2017</b><br>10.30AM – 12.30 PM | TECHNICAL SESSION (III): Dr. Aheibam Dinamani Singh<br>Associate Professor, Department of Electronics and Communication Engineering ,NERIST, Nirjuli<br>Topic: Introduction of Wireless Communication<br>Research Trends in Wireless Communication                                 |
| <b>15<sup>th</sup> March 2017</b><br>2 PM – 3.30 PM     | TECHNICAL SESSION (II) - 2.00 pm to 3.30 pm<br>Dr.Santanu Maity, Assistant Professor, Department of Electronics and Communication Engineering, NIT, Arunachal Pradesh<br>Topic: Hetero-junction field effect Transistor : Future Research  |

### **2.3. TARGET GROUP**

Research scholars, PG students, faculty members and industry people in national level.

### **2.4. HOW THE WORKSHOP WAS BENEFICIAL FOR THE PARTICIPANTS**

The purpose of this Workshop was to enable the participants to apply the skills learned through video presentations of the Workshop. Participation in this Workshop enabled the participants to learn how to utilize the Mobile communication infrastructure in a better and productive way.

This Workshop seeks to bridge the divide between what has traditionally been viewed as the sole objective of Information Technology and what CAN be the triple bottom line for forward-thinking Information Technology: its real application, ease of use, advancements and profit.

### **2.5. HIGHLIGHTS**

- NO REGISTRATION FEE
- CERTIFICATE OF PARTICIPATION
- FOR FACULTIES/RESEARCHERS
- TUNED TO SUIT THE RESEARCHERS OF ALL DOMAIN

### **2.6. THE COURSE DETAILS**

1. Registration of conference started Date: 22-4-2015  
and Last Date for registration: 28-08-2015
2. The conference date: 14-15 September 2015 ( 2 days)
3. The Total Number of Registrations: 213
4. The faculty members and research scholars from the following states (12 states) and Union Territory, registered for conference.
  - i. Andhra Pradesh
  - ii. Arunachal Pradesh
  - iii. Assam
  - iv. Karnataka
  - v. Kerala
  - vi. Manipur
  - vii. Rajasthan
  - viii. Tamil Nadu

- ix. Uttar Pradesh
- xi. Manipur

- x. West Bengal
- xii. West Bengal

5. Materials on Advances in Electronics & Communication and Instructions about Workshop communicated through mails to all registered members.

**2.7. PANEL DISCUSSIONS**

NA

**2.8. VALEDICTORY SESSION**

NA

### **3. MAJOR TAKEAWAYS**

#### **3.1. ACADEMIC CONTEXT**

It was increasingly feasible to create and sustain virtual networks using resources such as videoconferencing and web 2.0 communications, which allowed substantial value in bringing people together to be immersed in a common experience. Personal interactions also allow for informal communication outside the defined schedule that can be valuable to the network-building process.

A key element for ensuring success and enhancing sustainability in this Workshop is the participation of teams from institutions, including a range of junior to senior members on each team. The adopted Workshop model has shown added success and commitment by participants if their home institute provides at least modest resources to help implement what faculty learns.

#### **3.2. RESEARCH CONTEXT**

As the design of the planning committee meeting of Dept of Mathematics, RGU suggested, the Workshop built around extensive, direct participation. Participants have the opportunity to be both “students” and “teachers,” to practice the methods they are learning, and to develop “teachable tidbits” and other materials (e.g., appropriate assessments) to help them implement their research or modules at their innovation practices.

An important feature of this Workshop’s hands-on approach is the commitment to assist participants in implementing what they have learned. In addition to implementing new ideas or courses, they acquired experience and resources to plan and carry out effective assessments of whether the learning goals of their new activities are being met. Through this Workshop participant academics from various universities discussed didactical approach of research in data science and get its benefits for their research.

### **3.3. POLICY MAKING AND PRACTICE CONTEXT**

At this Workshop, we will deliberate on some of the critical aspects of modern trends of advanced research tools in higher education. This Workshop introduces the Advances in Electronics & Communication research product family and provides a high-level overview of the major capabilities. Workshop highlights include examples that demonstrate first-person modeling, modeling paradigms, and black box modeling with a special reference to Machine learning and Deep learning.

The resource person through video presentation explained how we can use deep learning modules for data exploration to invert the classroom and create a more active learning environment. It is also covered best practices on incorporating technical computing, modeling, and simulation with MATLAB in research based academic curricula.

### **3.4. SUMMARY**

Department of Electronics and Communication Engineering and Department of Computer Science and Engineering, Rajiv Gandhi University organized a Free Workshop on "Advances in Electronics & Communication". Total 64 participants from various parts of the country attended the program connecting through online mode from their home.

Prof. Tomo Mibang, Hon'ble Vice-Chancellor congratulated the participants who completed the program and told that learning is a continuous process that promote teachers' teaching skills, master new knowledge, develop new proficiency, which in turn, help improve students' learning . He appreciated the Department of Electronics and Communication Engineering and Department of Computer Science and Engineering for organizing the program in an appropriate time. Prof. Rachob Taba, Registrar stressed that RGU always tries to provide the best and innovative learning environment to the participants, this time in an online mode.

All the participants expressed that they had wonderful learning experience during the Workshop and conveyed their gratitude to the Workshop Convener, Ms. Champa Tanga and Dr. Firos A, Secretary. They said that the learning experience from this Workshop would take them a long way in their academic prospects.

The Workshop organized by RGU was meant for faculty and researchers. The Workshop is specially designed to meet the modern education requirements of teachers, researchers, and trainers in HRD, training colleges and industrial organizations.

#### **4. APPENDIXES & ANNEXURE**

##### ***ANNEXURE 1: PHOTOGRAPHS***

##### ***ANNEXURE 2: MEDIA COVERAGE***

Media coverage about the conference is published on 16 March 2017 edition of Arunachal Front.