REPORT
ON

AICTE SPONSORED ONLINE SHORT TERM TRAINING PROGRAMME SERIES ON
BIG DATA ANALYTICS USING SOFT COMPUTING TOOLS
(FOR DATA ANALYTICS)

STTP – PHASE I: 27 SEPTEMBER – 02 OCTOBER, 2021

Sponsored by
All Indian Council for Technical Education

Organized by
Department of Computer Science and Engineering,
Rajiv Gandhi University

In association with
Department of Electronics and Communication Engineering
Department of Mathematics
Rajiv Gandhi University

Content

Organizing Committee

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Patrons	**Prof. Amitava Mitra** Pro Vice Chancellor, Rajiv Gandhi University **Dr. N. Tadar Rikam** Registrar, Rajiv Gandhi University **Prof. Shahin Ahmed** Dean Faculty of Engineering & Technology, Rajiv Gandhi University

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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 Faculty Development Program. At the very outset I owe a deep sense of gratitude to Chief Patron of this FDP, **Prof. Saket Kushwaha**, 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 FDP, **Dr. N. Tadar Rikam** , Registrar ,RGU giving approval for this FDP. I express my gratitude to the Patron of this FDP, **Prof. Amitava Mitra**, in completing the procedures with Faculty Development Programme. I am grateful **to Prof. Utpal Bhattacharjee**, Professor and Secretary of this STTP, Department of Dept. Of Computer Science and Engineering, RGU, for his 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, RGU.

Thanking you.

Dr. FIROS A
Coordinator, STTP
Department of Computer Science and Engineering,
Rajiv Gandhi University (A Central University),
Rono Hills, Doimukh – 791112
Arunachal Pradesh, India

Executive Summary

A 6 (six) days online AICTE sponsored online short term training program series on big data analytics using soft computing tools (STTP – PHASE I: 27 SEPTEMBER – 02 OCTOBER, 2021) was organized at Rajiv Gandhi University, Arunachal Pradesh with an objective to provide the faculty and research students with an understanding of big data analytics and related soft computing tools. Department of Computer Science and Engineering, Rajiv Gandhi University in association with Department of Electronics & Communication Engineering, Rajiv Gandhi University and Department of Mathematics, Rajiv Gandhi University organized the STTP from 27 September, 2021 to 02 October, 2021. Eminent resource persons from the field of data science and academics handled 16 technical sessions which were dealt with in the six days of the FDP.

There are many people who contributed a lot for organizing the program successfully. I express my sincere gratitude to each and every one who made this program 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 program. I express my heartfelt gratefulness to the Department of Electronics & Communication Engineering, Rajiv Gandhi University and Department of Mathematics, Rajiv Gandhi University for their constant support. I take this privilege to express my cordial appreciation to all the Resource Persons for giving their valuable time and sharing their wisdom through their course material during the STTP. I thank all the participants for actively participating in the program. 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.

Dr. FIROS A
Coordinator, STTP
Department of Computer Science and Engineering,
Rajiv Gandhi University (A Central University),
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Arunachal Pradesh, India

1. Introduction

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 Computer Science & Engineering

The Department of Computer Science 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 program 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 All India Council for Technical Education. According to the All India Council for Technical Education, 1987, the AICTE is vested with statutory authority for planning, formulation and maintenance of norms and standards, quality assurance through school accreditation, funding in priority areas, monitoring and evaluation, maintaining parity of certification and awards and ensuring coordinated and integrated development and management of technical education in the country. In the words of the Act itself:

To provide for establishment of an All-India council for Technical Education with a view to the proper planning and coordinated development of the technical education system throughout the country, the promotion of qualitative improvement of such education in relation to planned quantitative growth and the regulation and proper maintenance of norms and standards in the technical education system and for matters connected therewith.

References:
1. Our application in online mode to AICTE to get financial assistance to conduct STTP dated 19.11.2020 (under AQIS 2020-21 SHORT TERM TRAINING PROGRAMME (STTP) in NER and UTs of J&K and Ladakh scheme)

2. Financial sanction letter from AICTE Ref. No. 34-68/21/FDC/STTP-NER/P-1/2020-21, Dated 10.03.2021
3. Letter from AICTE Ref. No. Nil, Subject (permission to conduct STTP through online mode) dated 01.04.2021
4. sanctioned amount from AICTE is deposited to the university account with following details: (Account Number: 83420100000307, Bank Branch IFSC: BARB0VJARUN Amount deposited by AICTE: Rs. 300000 (Rupees Three lakhs) (Deposed on 24.03.2021) (rev a/c as other misc receipts)

1.3. Background

Through this industry associated STTP, we tried to build an environment to learn about the present scenario of big data analytics in academics and industries and participants to achieve

the practical knowledge from Big data experts. This STTP helped people unfamiliar with data science to put next gear in learning and research.

1.4. Significance And Objectives:

1. The objectives are to provide the faculty with an understanding of big data analytics.
2. To provide the participants with an understanding of different tools related to big data analytics.
3. Data Analytics is a conglomeration of many disciplines like computer science, statistics and business intelligence for discovering useful hidden patterns which is to be used for prediction of the future events in terms of providing useful insights.
4. To get hands-on experience of Python
5. Big data is a large volume of both structured and unstructured data generated from different sensors and applications such as social media, text documents, videos, audios, and images. The volume, varied formats of data and the rapid velocity of its generation poses an additional challenge to seek suitable soft computing tools and techniques to store, process, verify and analyze it.
6. To bring the participants to the level of depth necessary in the subject matter to achieve the stated objectives.
7. To encourage participation in the National Agenda of knowledge building through online distance education mode in the lockdown period due to novel corona virus.

1.5. Expected Outcomes

The purpose of this program is to enable the participants to apply the skills learned through various video tutorials and presentations of the STTP. Experts in this STTP will enable the participants to learn how to utilize the Data science infrastructure in a better and productive way.

This STTP 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 6 days STTP which aimed at providing valuable information to all the participants of the program. The main motive of this program 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 data science.

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.

- **Duration**. Experience from 6 days of STTP From 27-09-2021 to 02-10-2021 suggests that one week long program would be optimal, given the amount of new material that participants would be expected to absorb and the value of cumulative learning-by-doing.

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

- **Hands-on**. As the design of the planning committee meeting of Dept of CSE, RGU suggested, the STTP 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 new courses or modules at their home institutions.

- **Implementation and Assessment**. An important feature of this program'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.

1.7. Budget

Attached Separately

1.8. Modus Operandi

To encourage participation in the National Agenda of knowledge building through online distance education mode in the lockdown period due to novel corona virus (COVID-19).

2. Program Details:

2.1. Highlight of Program
1. No registration fee
2. Certificate of participation
3. Learn from home

4. For faculties/researchers
5. Tuned to suit the researchers of all domain
6. Materials of every session are communicated through mails to all registered participants.

2.2. The Course Details

1. **Start Date for Registration:**   22-4-2020
2. **Last Date for registration:**   25-09-2021
3. **STTP Duration:**   27-09-2021 to 02-10-2021 (6 days)
4. **STTP Exam Date (Online)**:   02 -10-2021
5. **Duration of Exam:**   1 hour
6. **Total Number of Resource Persons:**   15
7. **Total Number of Technical Session:**   16
8. **Total Number of Registrations:**   162 (Details: Annexure 1)
9. **Total Number of Participants:**   149 (Average attendance)
10. **Total Number of Participants qualified:** 105
11. **The faculty members and research scholars from the following states (20 states) and Union Territory registered for FDP.**
     i. Andhra Pradesh
     ii. Arunachal Pradesh
     iii. Assam
     iv. Bihar
     v. Chhattisgarh
     vi. Gujarat
     vii. Haryana
     viii. Himachal Pradesh
     ix. Jammu and Kashmir
     x. Karnataka
     xi. Kerala
     xii. Madhya Pradesh
     xiii. Maharashtra
     xiv. Manipur
     xv. Punjab
     xvi. Rajasthan
     xvii. Tamil Nadu
     xviii. Telagana
     xix. Uttar Pradesh
     xx. West Bengal

1.STTP- Phase I : STTP On BIG DATA ANALYTICS USING SOFT COMPUTING TOOLS (FOR DATA ANALYTICS) 20 Sep 2021 to 25 Sep 2021 (6 days), Link for Registration : https://rb.gy/gn65z4 , Last date of Regn: 18 Sep 2021
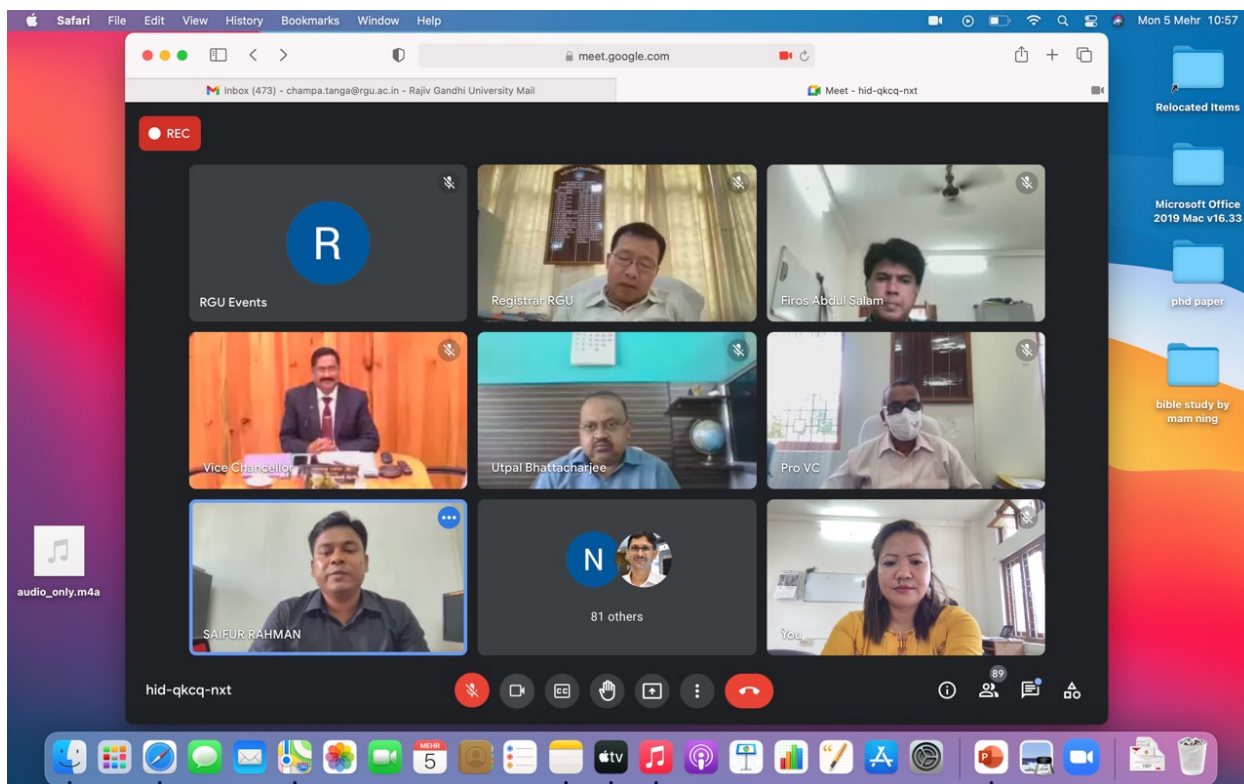
2. STTP- Phase II : STTP On BIG DATA ANALYTICS USING SOFT COMPUTING TOOLS (FOR DATA ENGINEERING) 27 Sep 2021 to 02 Oct 2021 (6 days), Link for Registration : https://rb.gy/aqkzih , Last date of Regn: 25 Sep 2021

3.STTP- Phase III : STTP On BIG DATA ANALYTICS USING SOFT COMPUTING TOOLS (WITH AI & ML) 04 Oct 2021 to 09 Oct 2021 (6 days), Link for Registration : https://rb.gy/u7thqo , Last date of Regn: 02 Oct 2021

3. **Session Wise Deliberations**

   3.1. **Inaugural Session**

10:00 AM -10:05 AM 27-09-2021	Welcome Address Organising Chairman **Prof. Utpal Bhattacharjee**, Dept of CSE
10:05 AM -10:10 AM 27-09-2021	Address by Coordinator **Dr. Firos A**, Asst Prof, Dept of CSE
10:10 AM -10:15 AM 27-09-2021	Theme of program by Convenor **Miss. Champa Tanga**, Asst Prof, Dept of ECE
10:15 AM -10:20 AM 27-09-2021	Remarks by Patron **Dr. N. T. Rikam**, Registrar, RGU
10:20 AM -10:25 AM 27-09-2021	Remarks by Patron **Prof. Amitava Mitra**, Pro Vice Chancellor, RGU
10:25 AM -10:35 AM 27-09-2021	Address by The Chair **Prof. Saket Kushwaha**, Hon'ble VC, RGU
10:35 AM -10:35 AM 27-09-2021	Vote of Thanks by Convenor **Dr.Saifur Rahman**, Dept of Mathematics

3.2. Technical Session

Session 1:

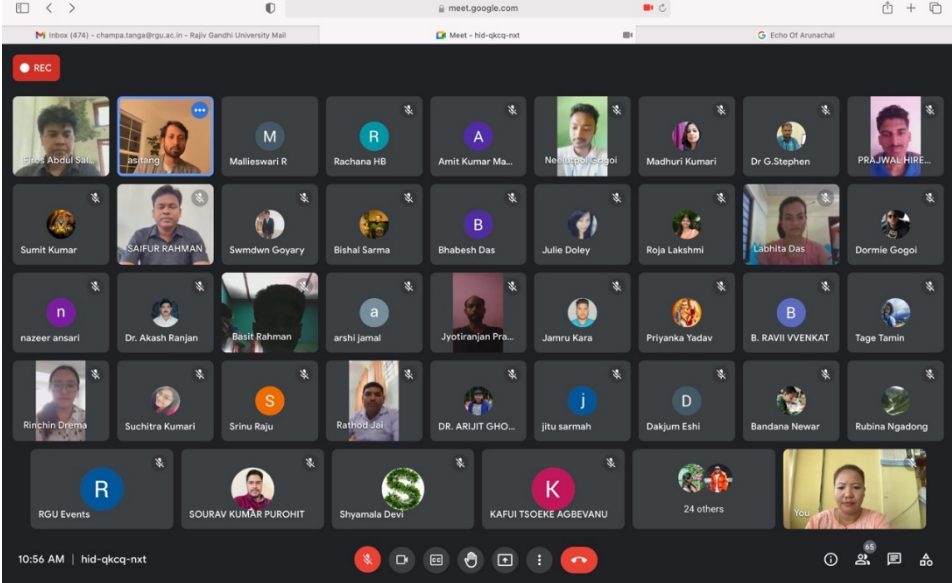| Date	27-09-2021
Time	10:40 AM -11:30 AM
Topic	Fundamentals of Data Science and Analytics
Resource Person	**Prof P K Mishra** Professor & Department of Computer Science, Institute of Science, Banaras Hindu University, Varanasi, India
	Dr Mishra is Professor in Computer Science department at Banaras Hindu University, Varanasi. He has more than 20 years of experience in teaching and research. His primary research interests are in Information Systems and Text Analytics. He has published about 105 research papers (including more than 40 in top SCIE indexed journals). He has supervised over 10 Doctoral thesis and more than 50 Master's thesis. He has obtained research grants from several national and international funding agencies and have worked on 08 extramural research projects. He is Editor of several Scopus indexed Journal. He has held several administrative responsibilities, including the Head of the department, Director of Computer Centre, Nodal Officer of UGC SWAYAM and Member of MHRD National Committee on E-Governance. He has also been member of Drafting Committee of new Science, Technology and Innovation Policy 2020 (STIP) of India. He is member of academic bodies of different Universities and an expert member in several research bodies.
Outline	• Introduction to data science & business analytics

	• Machine learning
	• Deep learning
	• Artificial intelligence

Session 2:

Date	27-09-2021
Time	11:30 AM -1:00 PM and 2:00 PM – 3:30 PM
Topic	Python Programming for Data Analytics
Resource Person	**Dr.P.Thiyagarajan** Assistant Professor, Department of Computer Science, Central University of Tamil Nadu, India
	P.THIYAGARAJAN is presently Assistant Professor in the Department of Computer Science Central University of Tamil Nadu. His broad areas of research include Machine Learning, Cryptography, Big Data Analytics,Information Security, and IoT. He has published more than 40 research papers – which includes 03 book – in various reputed journals/conferences. He is an active review member of a few SCI indexed journals, and core ranked conferences. He is the recipient of **Young Scientist Award'** by TamilNadu State Council for Science and Technology , 'Post-Doctoral Fellow' awarded by Department of Atomic Energy and 'Best Technical Award' by Aricent Technologies . He has 3 Projects Completed worth of 10.5 lakhs funded by ICSSR and MHRD. He Delivered 100 + invited talks in colleges and universities on various technical topics
Outline	• Data analytics and its importance • Why Python for data analytics? • Demonstration of basic of python • Data analytics life cycle • Discussion of different phases of data analytics through small projects • Demonstration of small data analytics project

Session 3:

Date	28-09-2021
Time	10:00 AM - 11:30 AM
Topic	An exploration of "Space"
Resource Person	**Mr. Asitang Mishra** Senior Data Scientist at NASA Jet Propulsion Laboratory, Los Angeles, California, United States
	Mr. Asitang Mishra is Senior Data Scientist at NASA's Jet Propulsion Laboratory in Pasadena, California. He work to:

	1. Implement and apply cutting edge research in Machine Learning and Artificial Intelligence to push the current state-of-art at JPL. 2. Do consulting internally (JPL, NASA, Caltech) and externally (Federal and State agencies like DARPA, DHS etc.) to help them update their current technology stack and with problem solving and automation using Machine Learning and AI. He has a lot of experience implementing pipelines involving Data Retrieval, Search Engines, Natural Language Processing (owing to my love for Literature!), Algorithm Design and Graph based Algorithms. He implemented many solutions for varied use cases like: 1. Deep Web Research 2. Cancer Research 3. Energy Industry Digitization Efforts 4. AI for First Responder support 5. So on...
Outline	• Introduction to JPL and Data Science activities at JPL • JPL Collaborative Projects • Text Search and Retrieval projects at JPL. • Some interesting ML based Earth And Space Science Projects at JPL.
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Session 4:

Date	28-09-2021
Time	11:30 AM – 1:00 PM
Topic	Data classification and recognition using neural networks
Resource Person	**Prof. Jamuna KantaSing** Department of Computer Science & Engggineering, Jadavpur University, Kolkata, India
	Jamuna Kanta Sing has received his B.E. (Computer Science & Engineering) degree

	fromJadavpur University in 1992, M.Tech. (Computer & Information Technology) degree fromIndian Institute of Technology (IIT) Kharagpur in 1994 and Ph.D. (Engineering) degree fromJadavpur University in 2006. Dr. Sing has joined the Department of Computer Science &Engineering, Jadavpur University in March 1997 and presently serving as a Professor since2010. He is a recipient of the **BOYSCAST Fellowship** of the Department of Science &Technology, Govt. of India for doing advanced research at the University of Pennsylvaniaand the University of Iowa, USA in 2006 and the **UGC Research Award** in 2014. He is a senior member of the IEEE, USA. He has published more than 45 research papers inSCI/SCOPUS and other reputed refereed International Journals and more than 65 papers ininternational conferences. He has supervised 12 PhD scholars and completed 5 R&D projectsfrom the AICTE, UGC and DST of worth around ₹65 Lakhs as principal investigator (PI).His research interest includes face recognition and detection, video analytics, medical imageprocessing, computational intelligence and pattern recognition.
Outline	• Brief overview of ANN • ANN structures • Training/Learning procedures • Designing a MLP neural network

Session 5:

Date	28-09-2021
Time	2:00 PM – 3:30 PM
Topic	Blockchain and Data Management
Resource Person	**Dr. Sarvesh Pandey** Assistant Professor, Computer Science - MMV Banaras Hindu University, Varanasi, India
	Dr. Sarvesh Pandey is presently Assistant Professor in the Computer Science - MMV, BHU, Varanasi, India. He received his Ph.D. degree (2020) in Computer Science & Engineering from M. M. M. University of Technology, Gorakhpur-273010, India. His broad areas of research include distributed real-time database systems, cloud computing and advanced data systems. He has published more than 25 research papers – which includes 01 book – in various reputed journals/conferences . He is an active review member of a few SCI indexed journals, and core ranked conferences.
Outline	• Blockchain - A Glance • History of Blockchain • Components of Blockchain • What do YOU need to build a basic blockchain based application? • Some Real-life Blockchain Applications

Session 6:

Date	29-09-2021
Time	10:00 AM – 11:30 AM
Topic	Contemporary Big Data Processing and Analytical Frameworks
Resource Person	**Dr. Sumit Kalra** Assistant Professor, Department of Computer Science and Engineering IIT, Jodhpur, Rajasthan, India
	Dr. Sumit Kalra earned his Ph.D. from IIT Kanpur in 2018 and joined IIT Jodhpur as Assistant Professor in the Department of Computer Science and Engineering. He is mainly interested in exploring the software architectural issues related to the quality of complex software systems across various domains such as data intensive processing, edge-fog computing, AI, and IoT-based systems. He has a couple of patents and high-quality publications in his name.
Outline	- Motivation of IoT, IoT Services, Big Data, Big Data Analytics , Relationship between IoT and Big Data Analytics, Big Data in IoT - Data Intensive System - State of the Art Frameworks - Key Approaches and open Issues

Session 7:

Date	29-09-2021
Time	11:30 AM – 1:00 PM
Topic	Social Network Analysis Using Rough Set and Fuzzy Sets
Resource Person	**Dr. Suman Kundu** Assistant Professor, Department of Computer Science and Engineering IIT, Jodhpur, Rajasthan, India
	Suman Kundu is an Assistant Professor of the Department of Computer Science and Engineering at Indian Institute of Technology Jodhpur. He leads the research group SoNAA: Social Network Analysis and Application. The research group is part of Cognitive and Social Analytics Lab of the department of Computer Science and Engineering at IIT Jodhpur. Dr. Kundu received his Ph.D. degree from Jadavpur University in 2017. His doctoral research work was carried out at Center for Soft Computing Research, Indian Statistical Institute between 2010 and 2015. He visited Engine group at Wroclaw University of Science and Technology in 2018-2019 for his postdoctoral research.
Outline	- Overview of Social Network Analysis - Rough Set for Social Network Analysis a. Hybrid Simulation of Information Diffusion b. Link Prediction: Tension Measure and Double Bounded Rough Set - Fuzzy Sets for SNA a. Fuzzy Granular Social Network Model b. Temporal Network and Exogenous Influence: Fuzzy Relative Willingness Measure

Session 8:

Date	29-09-2021
Time	2:00 PM – 3:30 PM
Topic	Applications of Fuzzy sets and Genetic algorithms in recommender systems
Resource Person	**Dr. Vibhor Kant** Assistant Professor, RGSC, Banaras Hindu University, Varanasi, India
	Dr. Vibhor Kant is currently associated with the department of Computer Science at RGSC unit of BHU Varanasi. Prior to joining BHU, he had served as an assistant professor in the Dept. of CSE at the LNMIIT Jaipur. He had also worked as an assistant professor in the dept of CS at Kalindi College, Delhi University. He had also served as a lecturer in the Dept. of Mathematics at KA PG college of Dr B.R.A.U. Agra. He was associated with various administrative responsibilities such as PG admissions, convener, Mess warden and IBM coordinator at the LNMIIT Jaipur Dr Vibhor Kant has earned his M. Tech, and Ph.D. degree from JNU New Delhi after completing his M.Sc. in Mathematics. He has guided various undergraduate and postgraduate students for their projects and dissertations. He has also supervised two Ph.D. students. He has published various articles in SCI/SCIE/Scopus indexed reputed journals and conference proceedings.
Outline	A recommender system aims to provide users with personalized online product or service recommendations to handle the increasing online information overload problem and improve customer relationship management.

Session 9:

Date	30-09-2021
Time	10:00 AM – 11:30 AM
Topic	Data analytics in research and development
Resource Person	**Dr. Rakhi Garg** Associate Professor, Computer Science, Mahila MahavIdyalaya, Banaras Hindu University, Varanasi, India
	Dr Garg is having more than 21 years of teaching experience. Before joining Banaras Hindu University in 2007 worked with SMS, Varanasi and RSMT, U.P. Autonomous College, Varanasi. **Education**: BSc (Hons.) Computer Science, MSc Computer Science, PhD in Computer Science from Banaras Hindu University. Also UGC NET qualified. **Papers published in International/national Journals and Proceedings**: Around 50 publications out of which 14 are SCOPUS indexed. **PhD guided**: Four have awarded and three are pursuing. Reviewer of various International Journals Presented papers in various national/international Seminars/conferences/workshops. Jury member of Smart India Hackathon 2018 & 48th Jawaharlal Nehru National Science, Maths and Environment Exhibition (JNNSMEE)", organized by Kendriya Vidyalaya, 2021

	Delivered talks/Lectures in various Orientation/Refresher courses/Workshops Have organized various national Seminar/Workshops/Conferences. Nodal Person of MMV since 2009 and In charge, Computer Science, MMV from 2009 to March 2021. Worked as a Chairman of Badminton and Table Tennis, University Sports Board, Banaras Hindu University
Outline	data analytics is promising for R&D companies in the following ways: Predictive modelling can reveal targets for the product pipeline. Statistical tools can improve client recruitment and enhance monitoring. Data mining of public forums and social media sites can identify trends not formally reported.

Session 10:

Date	30-09-2021
Time	11:30 AM – 1:00 PM
Topic	Mining Social Network Graphs
Resource Person	**Mr. Ashwin Ganesan** Associate Professor, International School of Engineering (INSOFE) Mumbai, India
	Prof. Ashwin Ganesan received the Bachelor's degree in Electrical Engineering from Marquette University, Milwaukee, Wisconsin, in 1998. He received the Master's degree in Electrical Engineering from the University of Wisconsin at Madison in 2000. He is an Associate Professor at the International School of Engineering (INSOFE), Mumbai, Maharashtra, India. His research areas include distributed algorithms, graphs and algorithms in communication networks, discrete mathematics and graph theory, interconnection networks, applied combinatorics, and graph algorithms in data science. His research results have been published in journals such as IEEE Transactions on Communications, Linear Algebra and its Applications, IEEE Transactions on Information Theory, Applied Mathematics Letters, Wireless Networks, Discrete Mathematics, Journal of Algebraic Combinatorics, Discrete Applied Mathematics, and IEEE/ACM Transactions on Networking.
Outline	• Social networks and locality • The community detection problem – Problems with standard clustering methods (such as K-means, hierarchical clustering) • Specialized clustering methods for social network graphs – Edge-betweenness – Girvan-Newman algorithm and examples – Algorithm for computing betweenness of all edges – Implementation of Girvan-Newman algorithm in Python

Session 11:

Date	30-09-2021
Time	2:00 PM – 3:30 PM
Topic	Making Sense from Textual Data

Resource Person	**Dr Vivek Kumar Singh** Professor & Head, Department of Computer Science, Banaras Hindu University, Varanasi, India
	Dr Vivek Singh is Professor and Head of Computer Science department at Banaras Hindu University, Varanasi. He has about 18 years of experience in teaching and research. His primary research interests are in Information Systems, Text Analytics and Scientometrics. He has published about 105 research papers (including more than 40 in top SCIE indexed journals). He has supervised over 10 Doctoral thesis and more than 50 Masters thesis. He has obtained research grants from several national and international funding agencies and have worked on 08 extramural research projects. He is Editor of Journal of Scientometric Research (which is indexed in Scopus). He has held several administrative responsibilities, including the Head of the department, Director of Computer Centre, Nodal Officer of UGC SWAYAM and Member of MHRD National Committee on E-Governance. He has also been member of Drafting Committee of new Science, Technology and Innovation Policy 2020 (STIP) of India. He is member of academic bodies of different Universities and an expert member in several committees of DST and DBT. He is a Senior Member of IEEE & ACM & Life Member of ISSI.
Outline	• Contextual Settings • Machine Learning • ML for Text Processing • Document Classification & Clustering • Sentiment Analysis

Session 12:

Date	01-10-2021
Time	10:00 AM-11:30 AM
Topic	Big Data Analytics applications in real life
Resource Person	**Dr. Mansaf Alam** Associate Professor, Department of Computer Science, Jamia Millia Islamia, New Delhi, India
	Dr. Mansaf Alam is presently working as an Associate Professor, Department of Computer Science Jamia Millia Islamia, New Delhi. He is mainly interested in exploring the software architectural issues related to the quality of complex software systems across various domains such as data intensive processing, edge-fog computing, AI, and IoT-based systems. He has a couple of patents and high-quality publications in his name. He has published more than 80 research papers – which includes 03 book – in various reputed journals/conferences. He is an active review member of a few SCI indexed journals, and core ranked conferences.
Outline	Discovering consumer shopping habits. Personalized marketing. Finding new customer leads. Fuel optimization tools for the transportation industry.

	User demand prediction for ridesharing companies.
	Monitoring health conditions through data from wearables.
	Live road mapping for autonomous vehicles.

Session 13:

Date	01-10-2021
Time	11:30 AM – 1:00 PM
Topic	Big Data Analytics in Business and Marketing
Resource Person	**Dr. Chaudhary Kiran** Assistant Professor, Department of Commerce, Shivaji college, University of Delhi, New Delhi, India
	She holds Ph.D in Marketing (Commerce) from Kurukshetra University, Kurukshetra, Haryana She Presented papers in various national/international Seminars/conferences/workshops. Delivered talks/Lectures in various Orientation/Refresher courses/Workshops Have organized various national Seminar/Workshops/Conferences. She has published various articles in SCI/SCIE/Scopus indexed reputed journals and conference proceedings.
Outline	Big data analytics provides the business intelligence you need to bring about positive change, like improving existing products or increasing revenue per customer. Brand awareness is another way big data can have a significant impact on marketing.

Session 14:

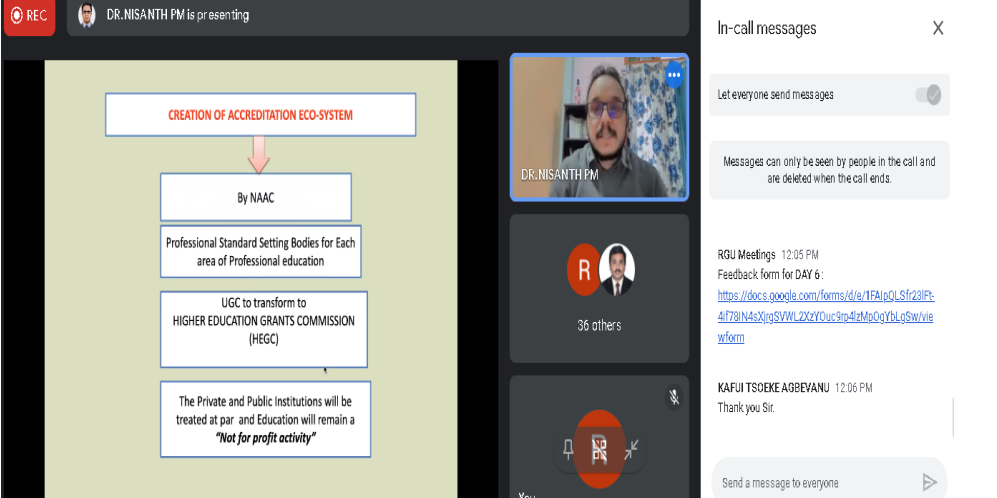| Date	01-10-2021
Time	2:00 PM – 3:30 PM
Topic	Data Science for Internet of Things (IoT): Differences From Traditional Data Science
Resource Person	**Dr. S. Neduncheliyan Subbu** DEAN, School of Computing at Bharath Institute of Higher Education & Research, Chennai, Tamilnadu, India
	Professor Dr.S.Neduncheliyan working as Dean of school of computing (SoC), Bharath Institute of Higher Education and Research, Chennai. He holds B.E in Computer Science and Engineering in 1989 from University of Madras, M.S (Engg) in A.I Robotics from School of Electrical and Electronics Engineering from Universiti Sains Malaysia, Penang, Malaysia in 1999 and Ph.D in Information and Communication Engineering from Anna University, Chennai in 2009.He is having more than 30 years teaching experiences in abroad as well as in India. He has published more than 102 research papers in various International and National Journals and Conferences. He has supervised more than 54 M.E and 10 Ph.D thesis. He has organized 27 webinars and invited as a resource person for 12 webinar. He is recipient of Indira Gandhi Excellent Award'2013, International Business Council, New Delhi, Outstanding Educator & Scholar Award 2014,

	NFED, Coimbatore, India, Best Research Supervisor Award 2015, Grabs Educational Charitable Trust, Chennai, India, Best NSS Unit Award 2017, Anna University, Chennai, India, South Indian Achiever Award 2020, Kalam Dream Trust, Chennai, 28th January2020 / Chennai, Life Time Achievement Award2020, Bestow Edutrex International Award, 5th September 2020 / Bombay . He is having Fellowship from IETE and Membership from IET. His main research area includes Wireless Sensor Networks, Robotics, Internet of Things and Wireless Communication.
Outline	In traditional data science, a variety of algorithms are implemented, but for IoT, time series models are deployed such as ARIMA, Moving Average, Holt-Winters, etc. The basic difference is the volume of data but also complex real-time implementation for the same model, so the use of models shifts over IoT verticals.

Session 15:

Date	02-10-2021
Time	10:00 AM – 11:30 AM
Topic	Learning Data Science with COVID -19 Data
Resource Person	**Dr. Ann Baby** Assistant Professor, Rajagiri College of Social Sciences, Kalamassery, Cochin, India
	A PhD holder in Computer Science from Bharathiar University, she is a University rank holder in her post-graduation and also holds an M.Phil degree. With more than 17 years of teaching experience in the Postgraduate level, she has to her credit several research papers, published in reputed National and International journals. Her latest journal article has been published in the Q1 journal, Computers in Human Behaviour. Mrs. Ann Baby was the conference coordinator of several funded workshops and seminars. She has also successfully completed a UGC funded Minor Research Project. She has conducted training programmes for international corporates like NEC Communications, Japan and the Dubai Port World. She is a lifetime member of CSI (Computer Society of India). She is the resource person for several expert sessions on Cyber Security, Data Analytics, Machine Learning, Digital Libraries, Swachtha and Environment Friendliness.
Outline	• Impact of COVID on the demand for data scientists • How to build a career in data science • 'Hot' data science skills & how to acquire them

Session 16:

Date	02-10-2021
Time	10:00 AM – 11:30 AM
Topic	NEP 2020 : A New Chapter
Resource	**Dr. Nisanth P.M** , Assistant Professor ,Department of Education ,Rajiv Gandhi

Person	University (A central university) ,Rono-Hills, Doimukh-791112, Arunachal pradesh
	Dr. Nisanth P.M is an Assistant Professor ,Department of Education ,Rajiv Gandhi University (A central university) ,Rono-Hills, Doimukh-791112, Arunachal pradesh , His Area of Interest include Educational Psychology, Guidance And Counselling, School Administration And Management, Critical Pedagogy, Research Methods In Education etc . His Specializations are in Educational Psychology, Guidance And Counselling, School Administration And Management
Outline	NEP-2020, which will replace the National Policy on Education-1986, is an inclusive framework focusing on the elementary-level of education to higher education in the country. As the objective of any education system is to benefit children so that no child loses any opportunity to learn and excel because of circumstances of birth or background, NEP-20202 has a target of 100% Gross Enrolment Ratio (GEER), in school education by 2030

3.3. Examination:

An examination was conducted via online (https://docs.google.com/forms/d/e/1FAIpQLSdLO4wLOuLj9SC4FryMxBci1SpMPwD5VcyBecHevivFmTebdQ/closedform) among the participants. It was a multiple choice question based examination. It consisted of twenty questions and each question consisted of four options. Duration of the exam was 1 hour.

4. Major Takeaways

4.1. 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. Experience from the program From 29 April 2020 to 03 May 2020 suggests that one week long STTP would be optimal, given the amount of new material that participants would be expected to absorb and the value of cumulative learning-by-doing.

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

4.2. Research Context

As the design of the planning committee meeting of Dept of CSE, RGU suggested, the STTP 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 to help them implement their research or modules at their innovation practices.

An important feature of this STTP'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 FDP participant academics from various universities may discussed didactical approach of research in data science and get its benefits for their research.

4.3. Policy Making and Practice Context

At this STTP, we will deliberate on some of the critical aspects of modern trends of advanced research tools in higher education. This STTP introduced the data science research product family and provides a high-level overview of the major capabilities. This program also highlighted some examples that demonstrated modeling for big data science, modeling paradigms with a special reference to Machine learning and Deep learning.

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

4.4. Summary

The 6 Days Short Term Training Program (ONLINE) series on big data analytics using soft computing tools (STTP – PHASE I: 27 SEPTEMBER – 02 OCTOBER, 2021) organized by Department of CSE, Rajiv Gandhi University in association with Department of Electronics and Communications, RGU and Department of Mathematics, RGU was concluded today. Total 162

participants from various parts of the country attended the program connecting through online mode from their place.

Resource persons were from different higher educational institutions and industries and they delivered their expertise to the participant. Every session had an interactive part among students and resource person. Resource person's presentations and reports were of high standard and delivered what they were intended for.

Prof. Saket Kushwaha, 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 expressed that, the outbreak of COVID-19 pandemic in India has caused extreme distress to the society and is a setback to academic activity. In this moment of crisis, RGU has endeavored to leverage digital access for continuation of the academic activities by online mechanisms, he said. He appreciated the Department of CSE for organizing the program in an appropriate time. Prof. A. Mitra, Pro-Vice Chancellor stressed the importance of online platforms for learning during this pandemic.

All the participants expressed that they had wonderful learning experience during the STTP and conveyed their gratitude to the FDP secretary Prof. Utpal Bhattacherjee and convener Dr. Firos A. They said that these 5 days experience would take them a long way in their academic prospects.

The STTP organized by RGU was meant for faculty and researchers. The STTP is specially designed to meet the modern education requirements of teachers, researchers, and trainers in HRD, training colleges and industrial organizations. The 6 days program from 27-09-2021 to 02-10-2021, which was the first phase of the series, not only covered basic idea about the big data analytics, which can play great role in almost all research areas but also focused on qualitative and quantitative research methods and innovative pedagogical techniques.

Participants were given the learning resources that will support their classroom instruction as well as in their research in future. The added advantage for this offering was the scope to learn through diversity in the participant's background. They were from different fields of Engineering, Science, Management, etc. and came with a rich array of experience. The participants from all over the country worked together in groups, staying at home and connecting through online platform.

Annexure 1 (List of participants):

Annexure 2 (Examination Questions):

Annexure 3 (Examination Marks Details):

Annexure 4 Sample Participation certificates:

Annexure 5 (Feedback of Participants):

Annexure 6 (Video URLs of Training Programs):

Video recording s of Phase 2 is available at the following playlist link

https://www.youtube.com/playlist?list=PLWrGpNQV0Iy5x992Fx200clzwSFvmZups

Annexure 7 (Press release): Press Release Times of Arunachal

Annexure 8 AQIS APPLICATION for STTP details

Annexure 9 Brochure

Annexure 10: List of Participates Successfully Completed the course

1	Mr	SANTHAKUMAR.S	Annamalai university
2	Mr	S. RADHAKRISHNAN	Annamalai University
3	Mr	Mahadev Bandeppa Bhatade	Rajarshi Shahu Mahavidyalaya (Autonomous) Latur
4	Mr	Prajwal Hiremath	Bvvs science College
5	Mr	Gyamar Guma	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
6	Mr	AZHAGESAN R	Annamalai University
7	Ms	G KOKILA	Annamalai University
8	Mr	Raju Doley	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
9	Mr	Gitartha Pal	Xpro India limited
10	Mr	RANJITH KUMAR SUNKARI	CSIR- Central Institute of Medicinal and Aromatic Plants
11	Mr	Atul Nag	Kalinga Institute of Social Sciences
12	Dr.	Anand Kumar	J. R. Divyanga University, Chitrakoot
13	Mr	AJIT KARKI	The ICFAI University,Sikkim
14	Mr	MUKESH KUMAR	IIT BHU
15	Ms	AAKANKSHA JAIN	Poornima University
16	Mr	Jyotiranjan Pradhan	Ravenshaw University
17	Ms	NABONITA RAKSHIT	Rabindra Bharati university
18	Dr.	Heisnam Shanjit Singh	Rajiv Gandhi University
19	Ms	RAJESWARI M	IFET COLLEGE OF ENGINEERING
20	Dr.	M.RAMESH	SAVEETHA SCHOOL OF ENGINEERING
21	Dr.	NAZEER ANSARI	Rajiv Gandhi University
22	Mr	Kafui Tsoeke Agbevanu	Ho Technical University
23	Mr	Y R Janardhan Reddy	G Pulla Reddy Engineering College (Autonomous) :Kurnool
24	Mr	M. DINESH	K L University

25	Mr	Yerrapragada Yedukondala Sriram	MOTOVOLT
26	Ms	Malabika sarma	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
27	Mr	LAKHIKUMAR KALITA	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
28	Prof.	Suchitra Kumari	St. Xavier's College (Autonomous), Kolkata
29	Dr.	Arijit Ghosh	St. Xavier's College(Autonomous), Kolkata
30	Ms	Arshi Jamal	Government First Grade College, Raichur- Karnataka
31	Dr.	MD FARID SHAH	North Eastern Regional Institute of Science and Technology
32	Ms	Mohini Singh	National Institute of Pharmaceutical Education and Research (NIPER) SAS Nagar
33	Dr.	B. Raviivvenkat	Tumkur University
34	Ms	Labhita Das	International institute for population sciences , mumbai
35	Mr	Dilip Kumar Baruah	Moridhal College
36	Mr	Siranjib Saha	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
37	Mr	KRISHNA SONAR ROY	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
38	Mr	Bikash Das	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
39	Mrs	MADHURI KUMARI	Central University of Gujarat
40	Mr	Kabeer Kashyap	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
41	Mr	Neelutpol Gogoi	Moridhal College
42	Mr	AMIT KUMAR MANDAL	MORIDHAL COLLEGE
43	Mr	Bishal taye	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
44	Mr	Bishal Sarma	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
45	Ms	PINKI DOLOI	NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE & TECHNOLOGY
46	Mrs	Suchitra Kishanrao Kasbe	Rajarshi Shahu Mahavidyalaya Latur
47	Dr.	Kuppala Saritha	S.V. Degree & P.G. College
48	Dr.	Muralidhar Kurni	GITAM (Deemed to be University), Hyderabad
49	Mr	Basit Rahman	Rajiv Gandhi University, Arunachal Pradesh
50	Dr.	Dr. Abhijit Biswas	Assam University, Silchar
51	Dr.	Dr.Soumen Kanrar	Amity University Jharkhand Ranchi
52	Mr	Shiva Lahon	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
53	Ms	Seema Dwivedi	JNKVV College of Agriculture Powarkheda
54	Dr.	Stephen. G	St. Xavier's University, Kolkata
55	Dr.	P.Prema	Agricultural College and Research Institute,Madurai
56	Mrs	Shyamala Devi J	SRMIST
57	Mr	Rahul Shah	The ICFAI University, Sikkim
58	Mrs	Rubi Sharma	Rajiv Gandhi University Arunachal pradesh
59	Mr	Zahid Ahmed	NEHU
60	Ms	JYOTI V MASHALKAR	Rajarshi Shahu Mahavidyalaya(Autonomous), Latur
61	Mr	SWMDWN GOYARY	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
62	Mr	SOURAV KUMAR PUROHIT	Sambalpur University Institute of Information Technology (SUIIT), Burla
63	Mrs	Rachna HB	UBDTCE
64	Dr.	Chandrakanth G Pujari	Dr.Ambedkar Institute of Technology Bangalore

65	Ms	BANDANA NEWAR	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
66	Ms	JULIE DOLEY	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
67	Prof.	Mallieswari R	Ramaiah Institute of Management
68	Mr	Chow Cheyaseng Khen	Rajiv Gandhi University
69	Ms	Shraddha Sharma	PIEMR
70	Dr.	AKASH RANJAN	Assistant Professor, Department of Education,Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
71	Ms	Shilpi sikha Das	Gauhati University
72	Ms	Rinchin Drema	Rajiv Gandhi University
73	Dr.	PANKAJ KAKATI	Jagannath Barooah College (Autonomous), Jorhat, Assam, India
74	Mr	ALEX GEORGE	SRIET
75	Dr.	S. K.MANJU BARGAVI	Jain university
76	Dr.	Kiran Sree Pokkuluri	Shri Vishnu Engineering College for Women
77	Dr.	DR. JITU SARMAH	J.B.College
78	Mr	Jogen Sharma	MDI Murshidabad
79	Mr	Md Raghib Baber	MANUU
80	Dr.	Dr. Jaipal Rathod	Central University of Karnataka
81	Mr	Jamru Kara	Rajiv Gandhi University,Rono Hills,Doimukh, Arunachal Pradesh
82	Mrs	Subhalaxmi Das	College of Engineering and Technology
83	Mr	C SASIDHAR	AITS,RAJAMPET
84	Mr	Ajit Das	Bodoland University
85	Dr.	Prasanta Kumar Barik	Department of Education, Rajiv Gandhi University
86	Mrs	Kamuru sameena	SRI venkateshwara Institute of technology
87	Mr	Repudi Pitchaiah	Universal College of Engineering and Technology

More details about this program is kept in google drive , which may be accessed through
https://drive.google.com/drive/folders/1xFjDH6felXQr1e2KPR4Ohrq3tHE1GHZG?usp=sharing