



Report

One Week Online Faculty Development Programme on Data Science: Applications and Research Directions (5-9 July, 2021)

Sponsored by

AICTE Teaching and Learning (ATAL) Academy

Organized by

Department of Computer Science and Application

Atal Bihari Vajpayee University, Bilaspur, Chhattisgarh

Coordinator

Dr. Rashmi Gupta

Assistant Professor

Department of Computer Science & Application
Atal Bihari Vajpayee University, Bilaspur (C.G.)

Acknowledgement

I would like to express our deep sense of gratitude to Prof. A.D.N. Bajpai, Hon'ble Vice-Chancellor, Atal Bihari Vajpayee University, Bilaspur for always encouraging us to organize such kinds of programmes. I am also thankful to Dr. Sudhir Sharma, Registrar, Atal Bihari Vajpayee University, Bilaspur, and Dr. H.S. Hota, Head, Department of Computer Science and Application for their administrative support and guidance during the faculty development programme. I would like to thank AICTE for providing the financial support to organize this faculty development programme.

I also express my gratitude to the team of experts Prof. Aprajita Ojha IIITDM Jabalpur, Dr. Atul Gupta IIITDM Jabalpur, Prof. Maya Ingle DAVV Indore, Dr. Sanjeev Gupta IIIT Pune, Dr. Partha Pratim Roy IIT Roorkee, Mr. Hamanshu Nagar AOL, Dr. Mitul Ahirwal MANIT Bhopal, Dr. Vijay Bhaskar Semwal MANIT Bhopal, Dr. Pramod Kumar Singh IIIT Gwalior, Dr. Tanmoy Hazara IIIT Pune, Prof. O.P. Vyas IIIT Allahabad, Ms. Swapnil Nema Infosys Australia, and Dr. Lalit Singh NPCIL BARC, for giving their valuable time and imparting knowledge to the participants in the field of Data Science.

I would also like to thank all the faculty members of the organizing committee Mr. Jeetendra Kumar, Ms. Shriya Sahu, Mr. Umesh Kashyap, and Mr. Rupesh Naik for their kind support throughout the programme. Last but not least I am also thankful to all the faculty members, research scholars, and students for their active participation in the programme.

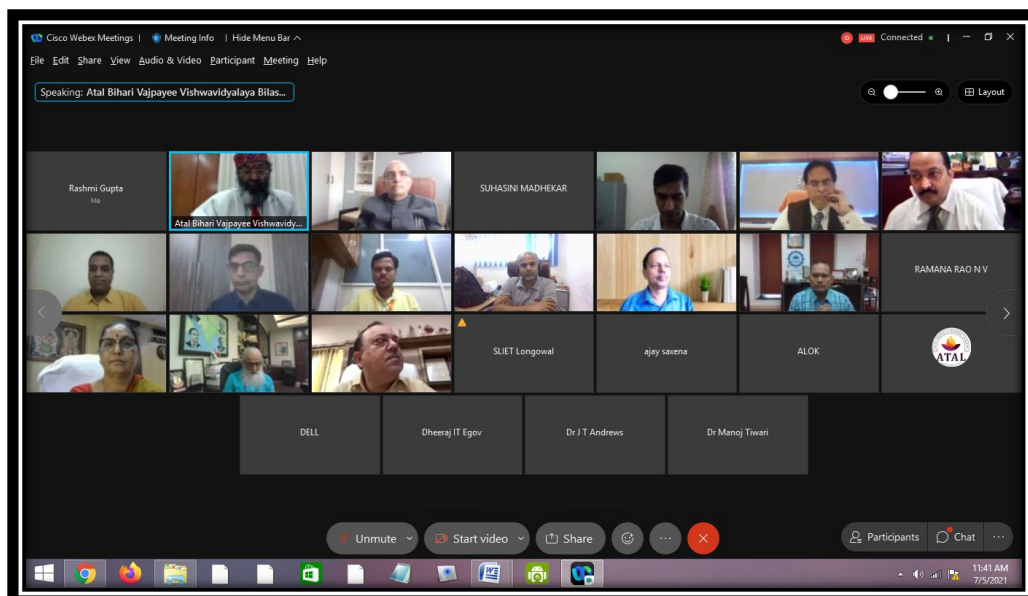
Coordinator
Dr. Rashmi Gupta

About Programme

The Department of Computer Science and Application organized a One Week Online Faculty Development Programme on “Data Science: Applications and Research Directions” sponsored by AICTE Teaching and Learning (ATAL) Academy from 5-9 July, 2021. This programme aims to promote research aspects in Data Science to solve many critical problems, to enhance the knowledge of participants in the field of data science and machine learning, to familiarize the participants with various python libraries required for Data Science, to enhance the analytical skills of participants in the area of research, and to provide a hands-on experience of the models and tools used for conducting research. In this FDP 200 participants were registered and 159 participants got certificate after assessment. Eminent speakers from IIT, NIT, and IIIT were invited and gave lectures in the FDP.

Inauguration

The joint inauguration of seventy-two faculty development Programmes was held on 5th July, 2021 at 11:00AM. In which Dr. D Sahasrabuddhe, Chairmen, AICTE New Delhi was Chief Guest and Prof. A.D.N. Bajpai, Hon'ble Vice-Chancellor, Atal Bihari Vajpayee University, Bilaspur was the special guest. Prof. Bajpai extended his warmed thanks to the AICTE and ATAL academy to approve and sponsor the faculty development Programme proposed by the Department of Computer Science and Application. He also explained the need of data science for future research and he assured that this faculty development programme will meet the expectation of the participants to fulfill their objectives.



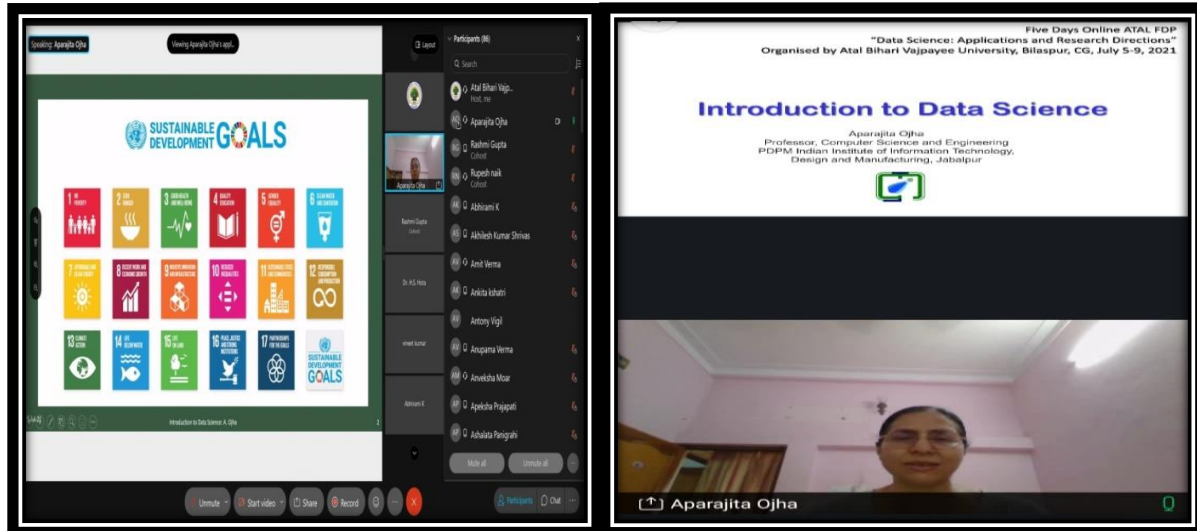
Sessions

Day- 1 (July 5th , 2021)

Session -1

Expert: Dr. Aprajita Ojha, Professor, PDPM IIITDM, Jabalpur (M.P.)

Topic: Introduction to Data Science and Data Science Tools

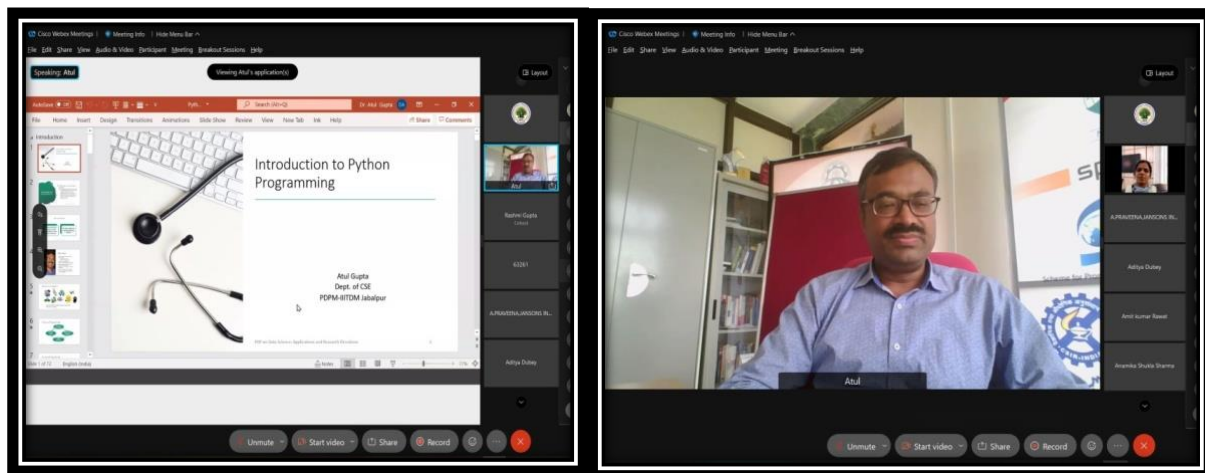


In this session, Prof. Aprajita Ojha has given the introduction of Data Science. She discussed Data Science, Data growth, Data explosion, and exploration. She also explained the Data science process workflow in detail. Her lecture also covered Data Types, Data Preprocessing, Data Visualization, Machine Learning Algorithms, and Data Science challenges. She concluded her lecture by wishing healthy life to participants.

Session -2

Expert: Dr. Atul Gupta, Associate Professor, PDPM IIITDM, Jabalpur (M.P.)

Topic: Introduction to Python Programming and Python basics

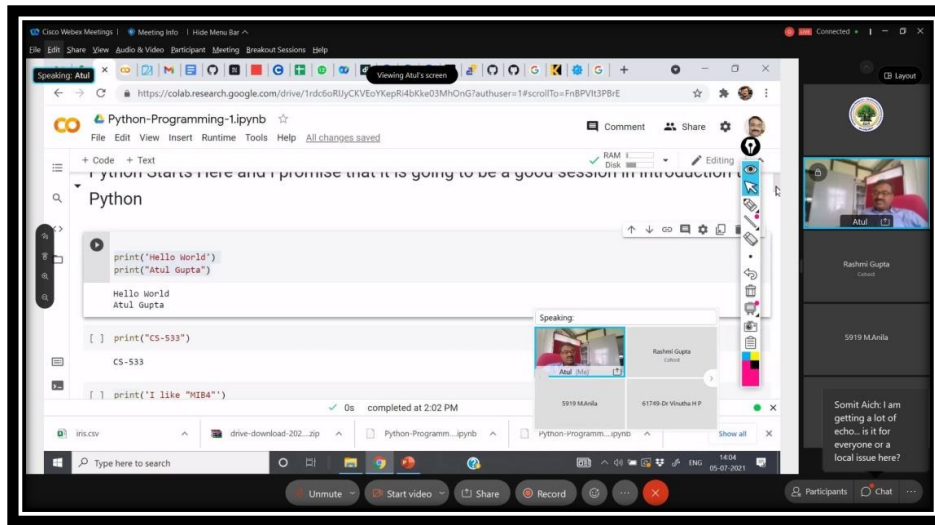


In this session, Dr. Atul Gupta has given the introduction of Python to participants. He has explained python basics, process of programming, programming methodologies, tools for python programming, data types, types of operators, comments, and error handling. Dr. Gupta has also given hands-on training on all the above topics to participants on Google Colab.

Session -3

Expert: Dr Atul Gupta, Associate Professor, PDPM IIITDM, Jabalpur (M.P.)

Topic: Python Data structures, file handling, and python libraries.



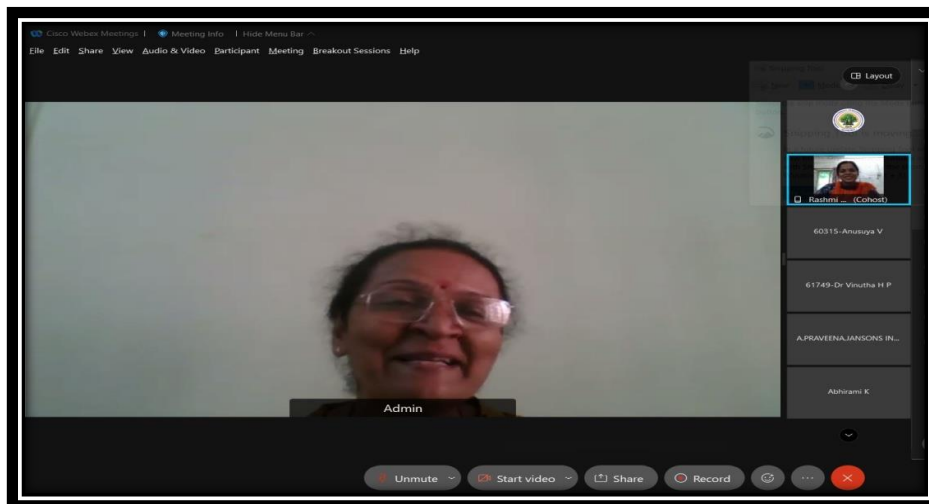
In this session, Dr. Atul Gupta has explained python data structures, manipulation of files and directories, string manipulation operators, file creation, reading, and other file handling operations. Dr. Gupta has also explained python libraries like pandas, scikit-learn, numpy, matplotlib, etc.

Day-2 (July 6th, 2021)

Session- 4

Expert: Dr. Maya Ingle, Professor, Devi Ahilya Vishwavidyala, Indore (M.P.)

Topic: Statistics for Data Science and EDA

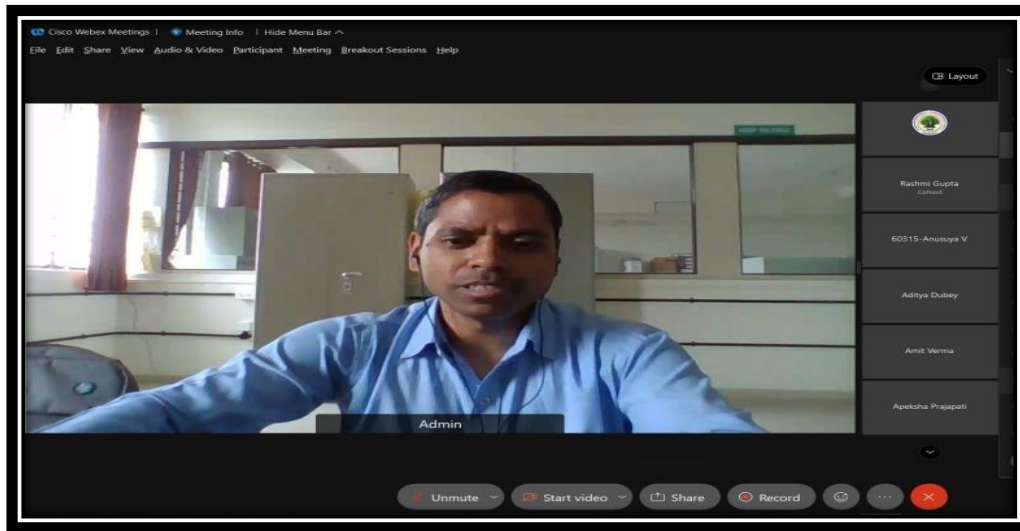


In this session, Dr. Maya Ingle has given the introduction of data science and exploratory data analysis. She has explained the source of data, measurement scale of data, characterization of data, descriptive measures, suitability of measures, and graphical summarization of data. She also explained aesthetics & types of data to participants and answer many queries of participants.

Session- 5

Expert: Dr. Sanjeev Sharma, IIIT, Pune, Maharashtra.

Topic: Introduction to Machine Learning

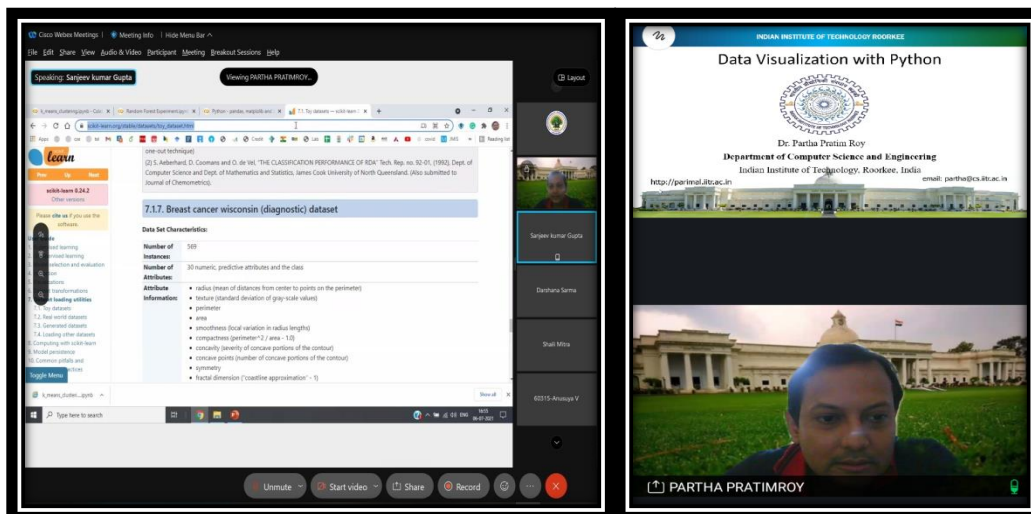


In this session, Dr. Sanjeev Gupta has introduced machine learning in his lecture. He explained the concept of machine learning, its application areas, machine learning models, classification models, basics of neural networks, perceptron, multilayer perceptron, activation function, cost function, and evaluation.

Session- 6

Expert: Dr. Partha Pratim Roy, IIT Roorkee, Utrakhand.

Topic: Visualizing Data with Python



In this session, Dr. Partha has explained the data visualization with python. At first, he introduced matplotlib library which is used for data visualization with python. Then he explained line plot, histogram, 3D plotting, stream plot, ellipses, plot chart, pie chart, scatter plot, filled plot, polar plot, etc.

Day-3 (July 7th , 2021)

Session- 7

Expert: Mr. Himanshu Nagarkar, Art of Living Organization, Bangalore, Karnataka.

Topic: Life Skill Management

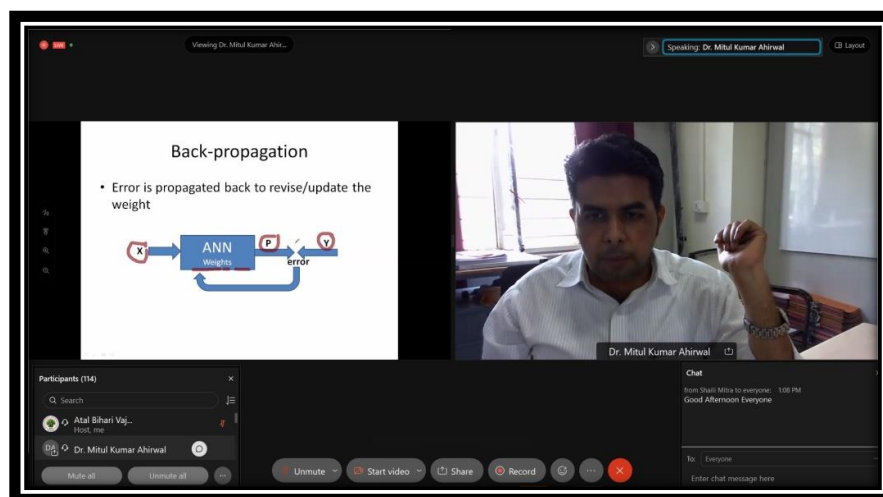


This session was non-technical session and was based on life skill management. In this session, Mr. Himanshu Nagarkar has explained how to manage stress in life. He told to live in present and participate in daily living activities. He demonstrated breathing exercises and *Sudarshan Kriya*.

Session- 8

Expert: Dr. Mitul Ahirwal, MANIT Bhopal (M.P.)

Topic: Model Development and Model Evaluation in Python

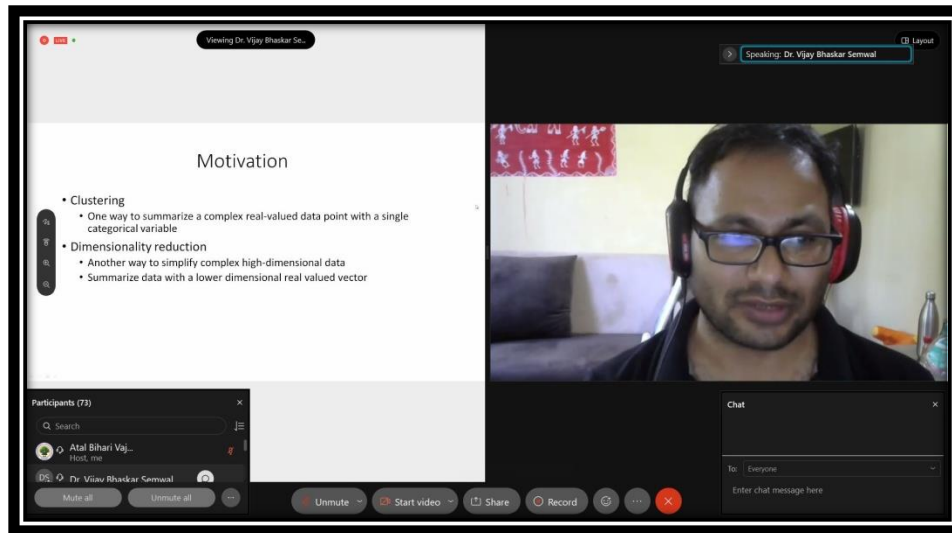


In this session, Dr. Mitul Ahirwal has given hands-on training on model development and model evaluation. He has explained the machine learning model, ANN model, and backpropagation techniques. He also demonstrated how to import dataset, preprocess dataset, building the ANN model, evaluating the model, defining the learning rate, use of optimization functions, etc.

Session -9

Expert: Dr. Vijay Bhaskar Semwal, MANIT, Bhopal (M.P.)

Topic: Dimensionality Reduction



The screenshot shows a Zoom meeting interface. The main window displays a slide titled "Motivation" with the following content:

- Clustering
 - One way to summarize a complex real-valued data point with a single categorical variable
- Dimensionality reduction
 - Another way to simplify complex high-dimensional data
 - Summarize data with a lower dimensional real valued vector

The slide also includes a search bar and a list of participants: Atal Bihari Vaj... (Host, me) and Dr. Vijay Bhaskar Semwal. The bottom of the screen shows standard Zoom controls like Unmute, Start video, Share, and Record.

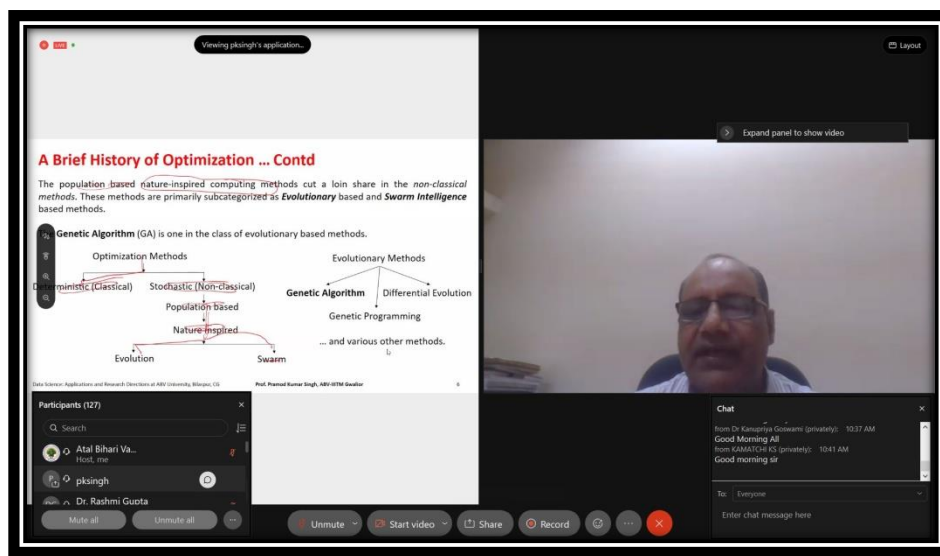
In this session, Dr. Vijay Kumar Semwal has explained dimensionality reduction. He has also explained data compression, principal component analysis, SIFT feature visualization, independent component analysis, and linear discriminative analysis.

Day -4 (July 7th, 2021)

Session -10

Expert: Dr. Pramod Kumar Singh, IIIT Gwalior (M.P.)

Topic: Optimization Techniques



The screenshot shows a Zoom meeting interface. The main window displays a slide titled "A Brief History of Optimization ... Contd" with the following content:

The population based nature-inspired computing methods cut a loin share in the non-classical methods. These methods are primarily subcategorized as **Evolutionary** based and **Swarm Intelligence** based methods.

Genetic Algorithm (GA) is one in the class of evolutionary based methods.

The slide includes a flowchart showing the classification of optimization methods:

- Optimization Methods
 - Deterministic (Classical)
 - Stochastic (Non-classical)
 - Population based
 - Nature-inspired
 - Evolution
 - Genetic Algorithm
 - Differential Evolution
 - Genetic Programming
 - ... and various other methods.
 - Swarm

The slide also includes a search bar and a list of participants: Atal Bihari Va... (Host, me) and pksingh. The bottom of the screen shows standard Zoom controls like Unmute, Start video, Share, and Record.

In this session, Dr. Pramod Kumar Singh has explained optimization techniques. He elaborated optimization problem and its notation, properties of optimization problems, classic optimization problems, evolutionary optimization methods, and genetic algorithms.

Session -11

Expert: Dr. Tanmoy Hazara, IIIT Pune, Maharashtra.

Topic: Classification Techniques

The screenshot shows a Zoom meeting interface. The main window displays a presentation slide with the title "What is logistic regression?". The slide content includes:

- Like all regression analysis, the logistic regression is a predictive analysis.
- Logistic regression is used to describe data and to explain the relationship between one dependent binary variable and one or more nominal, ordinal, interval or ratio-level independent variables.
- Unlike linear regression which outputs continuous number values, logistic regression transforms its output using the logistic sigmoid function to return a probability value which can then be mapped to two or more discrete classes.

The video feed shows Dr. Tanmoy Hazara speaking. The interface also includes a participants list with 122 participants, a chat window with messages from KAMATCHI K3, and a control bar with options like Unmute, Start video, Share, and Record.

In this session, Dr. Tanmoy Hazara explained classification techniques. He elaborated regression classifier, decision tree classifier, Random Forest classifier, Naive Bayes classifier, KNN classifier, SVM classifier, Adaboost classifier, etc.

Session -12

Expert: Dr. Omprakash Vyas, IIIT Allahabad (U.P.).

Topic: Clustering and Recommender System

The screenshot shows a Zoom meeting interface. The main window displays a presentation slide titled "Three Data based Techniques...". The slide content includes:

- Simple SQL Query & Reporting:** A flowchart showing "Data Selection" leading to "SQL Query" and "Table Report".
- Data Cube Creators:** A flowchart showing "Data Selection" leading to "Data Cube", "Slice and Dice", and "Report Generation".
- Knowledge Discovery:** A flowchart showing "Data Selection & Cleaning" leading to "Transformation", "Data Mining / Pattern Discovery", and "Interpretation / Knowledge".

The video feed shows Dr. Omprakash Vyas speaking. The interface also includes a participants list with 117 participants, a chat window with messages from Dr. Awadhech Kumar, and a control bar with options like Unmute, Start video, Share, and Record.

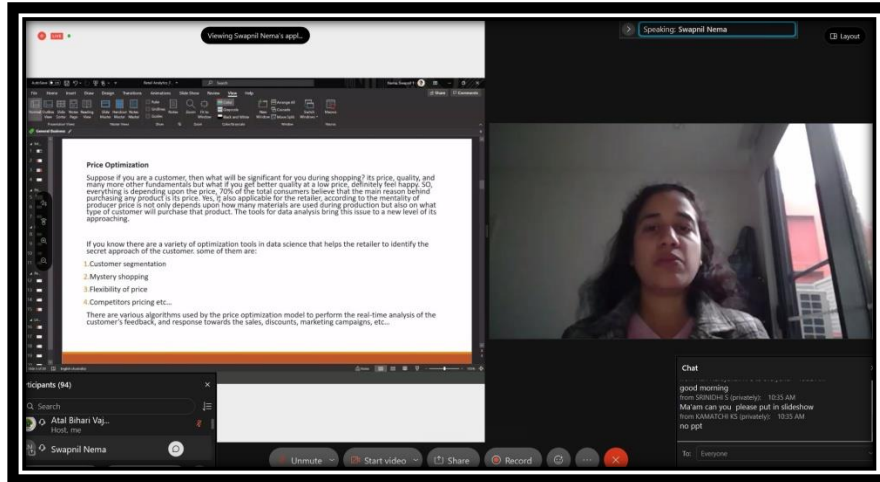
In this session, Dr. Om Prakash Yadav has explained clustering and recommender system. He elaborated clustering system, clustering approaches, KNN clustering, prescriptive approach & recommender system, challenges of recommender system, etc.

Day- 5 (July 9th , 2021)

Session -13

Expert: Ms. Swapnil Nema, Infosys, Australia.

Topic: Retail Data Analytics (Case Study-I)

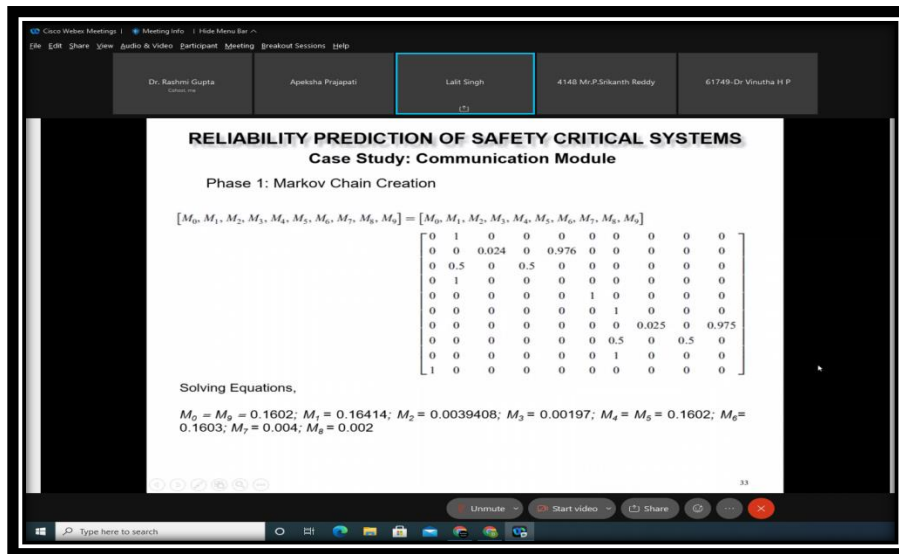


In this session, Ms. Swapnil Nema has explained retail data analytics. She explained the possibility of data analytics in the retail sector, customer segmentation, price optimization, customer segmentation models, and NLP examples for business.

Session -14

Expert: Dr. Lalit Singh, NPCIL, BARC, Mumbai, Maharashtra.

Topic: Software Reliability Analysis (Case Study-II)



In this session, Dr. Lalit Singh explained the software reliability model, assessment of the safety-critical system, and reliability prediction of safety-critical system.

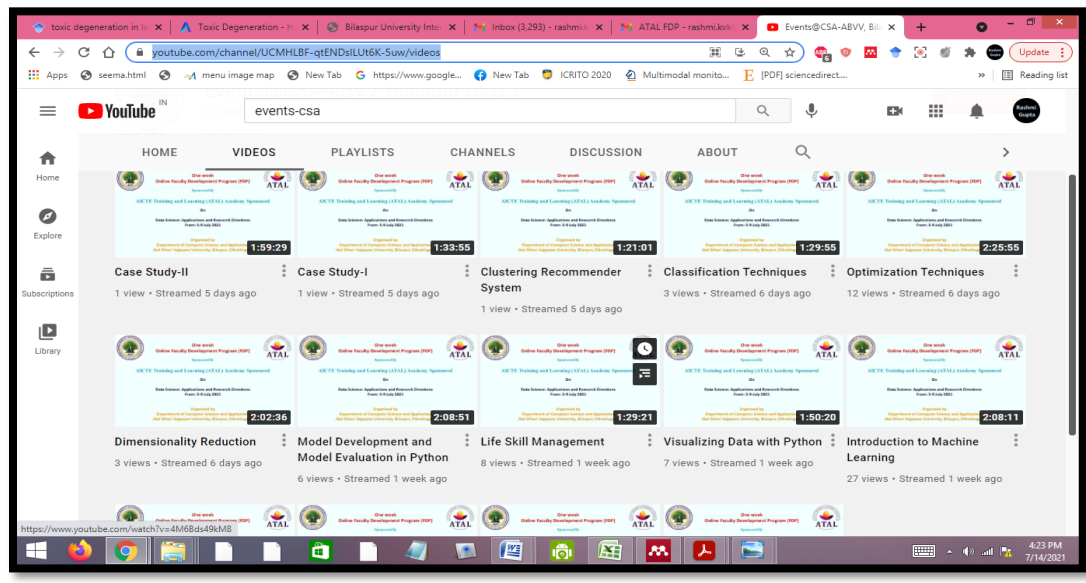
Assessment- After completing all sessions, the assessment was conducted through Google form. The assessment test was of 25 marks and 159 participants have cleared the exam and got the certificate.

Valedictory

At the end of the faculty development programme, a formal valedictory function was held. In this function, many participants shared their feedback about the faculty development Programme. Dr. H.S. Hota, Head, Department of Computer Science and Application, ABV University, Bilaspur addressed the participants and wished them a bright future. Dr. Rashmi Gupta, Coordinator, Faculty Development Programme expressed vote of thanks.



You Tube Link for Lectures- <https://www.youtube.com/channel/UCMHLBF-qtENDsILUt6K-5uw/videos>



Media Coverage



बिलासपुर भास्कर 08-07-2021

एयू • 5 दिवसीय फैकल्टी डेवलपमेंट प्रोग्राम का एआईसीटीई ने उद्घाटन किया डाटा साइंस के माध्यम से ही देशभर में हो रहे नए आविष्कार, इसे सीखना जरूरी: डॉ. अतुल

सिटी रिपोर्टर | बिलासपुर



अटल बिहारी वाजपेयी यूनिवर्सिटी के कंप्यूटर साइंस व एप्लीकेशन विभाग के द्वारा 5 दिवसीय फैकल्टी डेवलपमेंट प्रोग्राम किया जा रहा है। फैकल्टी डेवलपमेंट प्रोग्राम का विषय डाटा साइंस, एप्लीकेशन एंड रिसर्च डायरेक्शंस है। प्रोग्राम एआईसीटीई ट्रेनिंग एंड लर्निंग एकेडमी के द्वारा प्रायोजित है। एआईसीटीई न्यू दिल्ली ने 72 फैकल्टी डेवलपमेंट प्रोग्राम का उद्घाटन किया। अटल बिहारी वाजपेयी यूनिवर्सिटी के कुलपति आचार्य अरुण दिवाकर नाथ वाजपेयी ने शामिल लोगों को आईसीटी के महत्व के बारे में विस्तृत जानकारी दी। विभागाध्यक्ष डॉ. एचएस होत ने अतिथि एवं प्रतिभागियों का स्वागत किया। कार्यक्रम के प्रथम भाग में डॉ. अतुल इंडियन इंस्टिट्यूट ऑफ इनफार्मेशन टेक्नोलॉजी जबलपुर की प्रो. अपाजिता ओझा ने कहा कि आजकल डाटा साइंस अत्यंत उभरते विषय के रूप में देखा जाता है। बहुत सारे देश इसका उपयोग कर रहे हैं। अविष्कार कर रहे हैं। उन्होंने अत्यंत आसान तरीके से डाटा साइंस विषय को समझाया। उन्होंने डाटा साइंस में उपयोग होने वाले विभिन्न टूल्स की जानकारी भी प्रतिभागियों को दी। एफडीपी के दूसरे भाग में डॉ. अतुल इंडियन इंस्टिट्यूट ऑफ इनफार्मेशन टेक्नोलॉजी जबलपुर से डॉ. अतुल गुप्ता ने पद्धत प्रोग्रामिंग पर अपना व्याख्यान दिया। जिस पाठ्यन प्रोग्राम को पढ़ाने में 1 महीने तक लग जाता है, उन्होंने केस कोर्स के रूप में दो व्याख्यानों में ही प्रतिभागियों को समझाया। उन्होंने प्रतिभागियों को पढ़ाने के लिए का पर्सनल, पाठ्यन डाटा स्ट्रक्चर डिजाइन, कंट्रोल स्ट्रेटमेंट इन पाठ्यन एवं पाठ्यन लाइब्रेरीज के बारे में बताया। पाठ्यन प्रोग्रामिंग का प्रयोग कर ऑर्टिफिशियल मशीन लर्निंग कई शोध परियोजनाओं पर कार्य किया जा सकता है। उन्होंने प्रतिभागियों के प्रश्नों का समाधान किया। कार्यक्रम की संयोजक डॉ. रश्मि गुप्ता हैं। इस कार्यक्रम में देश के अलग-अलग राज्यों से 200 प्रतिभागियों शामिल हो रहे हैं।



बिलासपुर भास्कर 07-07-2021

एयू में संकाय विकास कार्यक्रम शुरू

बिलासपुर | अटल बिहारी वाजपेयी विश्वविद्यालय के कंप्यूटर साइंस एण्ड एप्लीकेशन विभाग ने डाटा साइंस विषय पर एक सप्ताह का संकाय विकास कार्यक्रम शुरू किया है। यह संकाय विकास कार्यक्रम अखिल भारतीय तकनीकी शिक्षा परिषद के वित्तीय सहयोग से आयोजित किया जा रहा। इसमें देश के 200 शिक्षक, शोधार्थी एवं स्नातकोत्तर के छात्र भाग ले रहे हैं। इसमें अखिल भारतीय तकनीकी शिक्षा परिषद नई दिल्ली के चेयरमैन डॉ. शहस्त्र बुद्धे, आईआईटी इंदौर के डायरेक्टर एवं अटल बिहारी वाजपेयी विश्वविद्यालय के कुलपति आचार्य अरुण दिवाकर नाथ वाजपेयी विशिष्ट अतिथि एवं अतिथि के रूप में शामिल हुए। एयू कुलपति आचार्य एडीएन वाजपेयी ने कहा कि हमारा विश्वविद्यालय तुलनात्मक रूप से नया है। परंतु हमारे उद्देश्य बड़े हैं। कंप्यूटर साइंस विभाग ने त्वरित रूप कार्यवाही करते हुए यह कार्यक्रम आयोजित कर रहा है, इसलिए वे बधाई के पात्र हैं।



ashmitanews.in/13835/


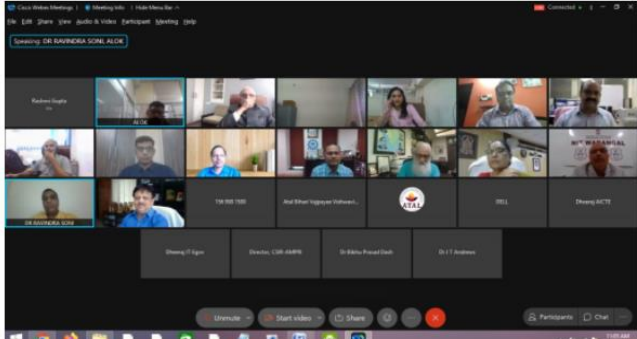
Wednesday, 14 July 2021

अस्मिता और स्वाभिमान

राष्ट्रीय मासिक पत्रिका

सामाजिक चेतना का संदेश वाहक

बिलासपुर | अटल बिहारी वाजपेयी विश्वविद्यालय के कंप्यूटर साइंस एण्ड एप्लीकेशन विभाग के द्वारा दिनांक 5 जुलाई 2021 से डाटा साइंस : एप्लीकेशन एंड रिसर्च डायरेक्शंस विषय पर पांच दिवसीय फैकल्टी डेवलपमेंट प्रोग्राम का शुभारंभ किया। जो कि एआईसीटीई ट्रेनिंग एंड लर्निंग एकेडमी के द्वारा प्रायोजित की गई है। एआईसीटीई न्यू दिल्ली द्वारा दिनांक 5 जुलाई 2021 को 72 फैकल्टी डेवलपमेंट प्रोग्राम का उद्घाटन किया गया।

जिसमें अटल बिहारी वाजपेयी विश्वविद्यालय के मा. कुलपति प्रोफेसर ए.डी.एन. वाजपेयी ने विशिष्ट अतिथि के रूप में उद्घोषण किया एवं उन्होंने



AMSTRAD D2AC

कोरोना से डरना मत
मारक लगाना भूलना मत

4:35 PM 7/14/2021