

A Report on  
Online faculty development program on  
**Data Science Using Machine Learning**  
(1<sup>st</sup> February to 6<sup>th</sup> February, 2021)

Jointly Sponsored by AICTE and GTU at  
**GUJARAT POWER ENGG. & RESEARCH INSTITUTE,**  
**MEHSANA**  
( A CONSTITUENT COLLEGE OF GTU )



# INTRODUCTION

Due to impact of COVID-19 pandemic and serious outbreak across the world, a drastic change is taking place among educational institutes of adopting online mode of teaching-learning. In this context, the main objective of this Faculty Development Program was the quality use of this period having consideration of suggestions of UGC to promote research orientation.

Data science using machine learning is indispensable in every field of higher education. The program was designed in such away for six days so as to give exposure to the participants about Data science, Applications of Data Science, Data Set and Web Scraping, Machine Learning and Practical role of Machine Learning. More than 33 faculty members from GTU affiliated institutions were allowed to participate. The FDP was hosted live on the Google meet platform on the following link.

Link for all the session of FDP: <https://meet.google.com/gbp-xfmh-jzk>.



**Gujarat Power Engineering And Research Institute**  
A Constituent College Of Gujarat Technological University



## Online Faculty Development Program On "Data Science using Machine Learning"

Jointly sponsored by GTU and AICTE

1st February to 6th February 2021



**Chief Convener**  
Dr. A.M. Prabhakar  
Principal, GPERI



**Inaugural Guest**  
Prof. (Dr.) S.D. Panchal  
Professor & Director, GTU-GSET



**Chief Patron**  
Prof. (Dr.) Navin Sheth  
Hon'ble Vice Chancellor, GTU



**Patron**  
Dr. K. N. Kher  
Registrar, GTU



**Convener and Eminent speaker**  
Prof. Rajesh Patel  
HOD, Computer Engineering



**Eminent Speaker**  
Dr. Chintan Shah  
Data Scientist Vphrase Analytics Pvt Ltd, Pune



**Eminent Speaker**  
Dr. Devang Pandya  
Assistant Professor, Information & Communication Technology



**Eminent Speaker**  
Dr. Amit Mahesh Joshi  
Dept. of Electronics & Comm. Engineering, MNIT, Jaipur



**Eminent Speaker**  
Dr. Mahesh M. Goyani  
GEC, Modasa  
Gujarat Technological University



**Eminent Speaker**  
Bharat Buddhadev  
Retired. HOD Computer and IT at Government Of Gujarat - Information Department



**Eminent Speaker**  
Dr. S.K. Hadia  
Associate Professor, EC(GSET-GTU)



**Eminent Speaker**  
Prof. TusharKumar Trambadiya  
Assistant Professor, Computer Engineering, GPERI-GTU



**Eminent Speaker and Coordinator**  
Prof. Soniya Jain  
Assistant Professor, Computer Engineering, GPERI-GTU



**Eminent Speaker and Coordinator**  
Prof. Maulik Patel  
Assistant Professor, Computer Engineering, GPERI-GTU

## OBJECTIVE AND COURSE CONTENT

To explain the use of Data Science (DS) technology and making participants more aware of the development of various applications using it. There is a need to explore research opportunities in this field. This FDP has provided a unique platform for enhancing the knowledge of the faculty members who are already doing or planning to do research in the field of Data Science.

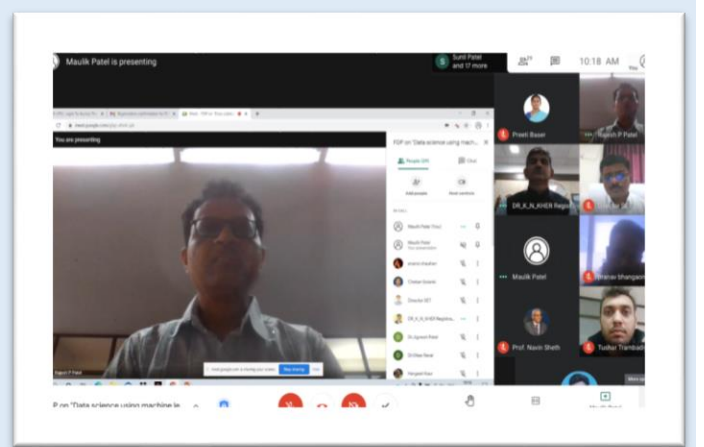
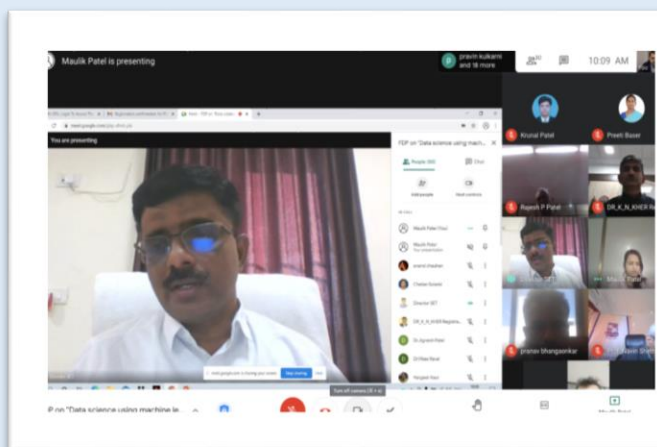
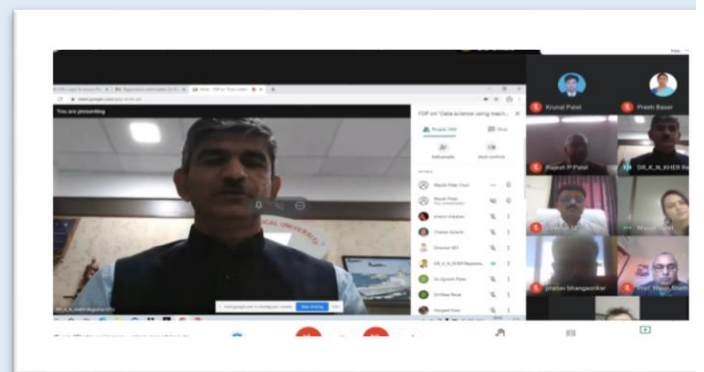
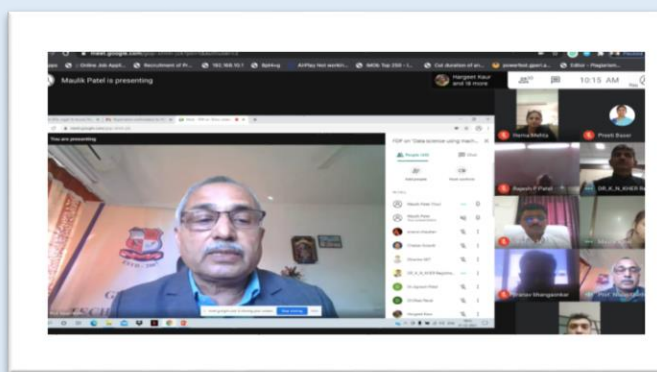
- Introduction to Data Science.
- Learning Python for Data Science.
- Applications and Practical environment setup for Data Science.
- Python Libraries for Data Science such as Numpy, Pandas, Matplotlib, sklearn.
- Creating Data Frames with pandas and reading csv files that contain Data Set and Web scraping.
- Role of Machine Learning in Healthcare.
- Use of Artificial Neural Network in Data Science.
- Recurrent Neural Networks (RNN).
- Introduction to Big data tools for ML.
- Scope & Future of Data Science.

## INAUGURAL SESSION

The inauguration of the Faculty Development Program began on 01.02.2021 at 09.45 am. Dr. A. M. Prabhakar, Principal-GPERI welcomed chief Petron Prof. and Dr. Navin Sheth, Honourable vice-chancellor GTU, Petron Dr K N Kher, Registrar-GTU, Special Guest Dr. S D Panchal, Director, GSET-GTU and all the participants. He wished and greeted all for the success of the program.

All the participants were welcomed and motivated by the auspicious words of Chief-Petron, Petron, Special Guest. Prof. Soniya Jain (Coordinator) briefed and explained all the rules and regulations to be followed during 6 days of the program. Prof. Maulik Patel (Coordinator) gave technical information regarding online lectures. Prof. Rajesh Patel (Convener) concluded the inaugural session with the formal vote of thanks.

The Inaugural session was ended with a good note of motivation to all the participants.



## ONLINE LECTURE SESSIONS

**Session - 1 | Day-1**

**Prof. Rajesh Patel**

Assistant Professor, GPERI

**Session - 2 | Day-1**

**Prof. Soniya Jain**

Assistant Professor, GPERI

**Session - 3 | Day-1**

**Prof. Maulik Patel**

Assistant Professor, GPERI

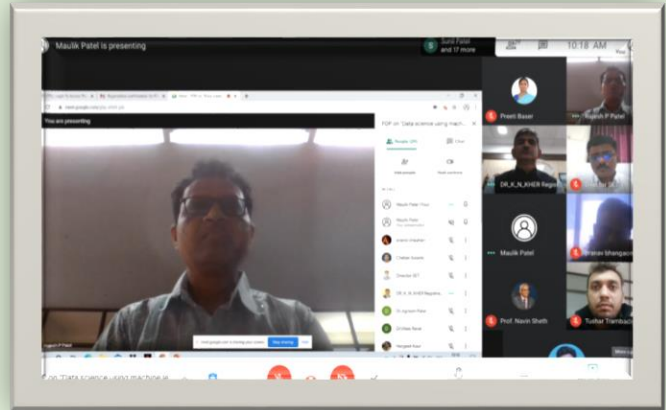


## Session - 1 | Day-1

**Prof. Rajesh Patel**  
Assistant Professor, GPERI

### **Institution:**

Gujarat Power Engg. & Res. Institute.  
Nr. Mevad Toll-booth,  
Ahd-Mehsana Exp.way, Mehsana,  
Gujarat 382710.  
Mail:- Rajesh.patel@gperi.ac.in,  
Contact no.:-9712823247.



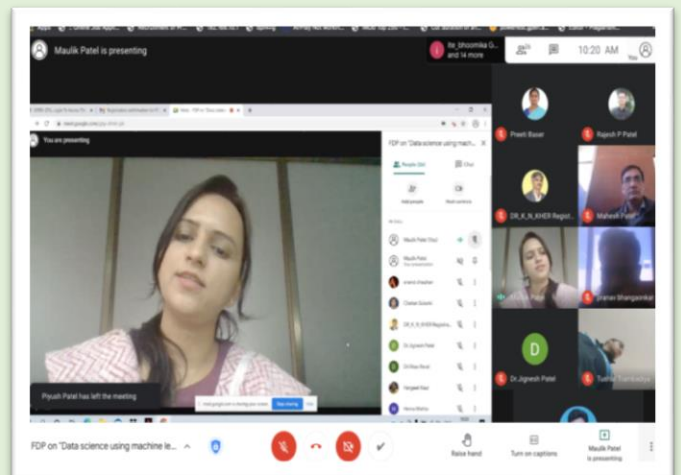
In the first session of the first day Prof. Rajesh Patel, introduced all the participants to Data Science. He described whereabouts of data science and machine learning. He gave thorough explanations about applications of Data Science & its use cases. Also discussed about various types of tasks performed by data scientists

## Session - 2 | Day-1

**Prof. Soniya Jain**  
Assistant Professor, GPERI

### **Institution:**

Gujarat Power Engg. & Res. Institute.  
Nr. Mevad Toll-booth,  
Ahd-Mehsana Exp.way, Mehsana,  
Gujarat 382710.  
Mail:- soniya.jain@gperi.ac.in,  
Contact no.:-9924096619.



In the second session of the first day was conducted by Prof. Soniya Jain. This session gave a brief overview of the seven steps that make up a data science lifecycle-business understanding, data mining, data cleaning, data exploration, feature engineering, predictive modelling and data visualization.

## Session - 3 | Day-1

**Prof. Maulik Patel**  
Assistant Professor, GPERI

**Institution:**

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Nr. Mevad Toll-booth,  
Ahd-Mehsana Exp.way, Mehsana, Gujarat  
382710.  
Mail:- [maulik.patel@gperi.ac.in](mailto:maulik.patel@gperi.ac.in),  
Contact no.:-9601566386.



The detailed applications of data science in various fields such as healthcare, finance, banking, transport, manufacturing was discussed in this session. In addition to that the tools and technology used in the field of Data Science was discussed along with practical environment setup to perform hands-on programs.

## ONLINE LECTURE SESSIONS

**Session - 1 | Day-2**

**Dr. Chintan Shah**  
Data Scientist, PHRAZOR

**Session - 2 | Day-2**

**Dr. Chintan Shah**  
Data Scientist, PHRAZOR

**Session - 3 | Day-2**

**Prof. (Dr.) Mahesh Goyani**  
Assistant Professor, GEC-Modasa



## Session - 1 | Day-2

Dr. Chintan Shah  
Data Scientist, PHRAZOR

### Institution:

Phrazor by vPhrase,  
Gujarat, India.

Mail:- [chintan.shah84@gmail.com](mailto:chintan.shah84@gmail.com),

Contact no.:-9428045980

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Python_GPERipynb
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1 | x = 'GPRI'
2 | print(x[10])

IndexError                                Traceback (most recent call last)
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----> 1 x = 'GPRI'
----> 2 print(x[10])

IndexError: string index out of range
SEARCH STACK OVERFLOW

```

This session covered all the basics of python data types, control structures like if-else, elif, nested if-else statements and looping statements. All the programming phenomenon were thoroughly explained to the participants.

## Session - 2 | Day-2

Dr. Chintan Shah  
Data Scientist, PHRAZOR

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Phrazor by vPhrase,  
Gujarat, India.

Mail:- [chintan.shah84@gmail.com](mailto:chintan.shah84@gmail.com),

Contact no.:-9428045980

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IndexError: string index out of range
SEARCH STACK OVERFLOW

```

This session covered in depth discussion about basic concepts of Python Programming. He elaborated about lists, tuples and dictionary with their respective methods.

## Session - 3 | Day-2

Prof. (Dr.) Mahesh Goyani

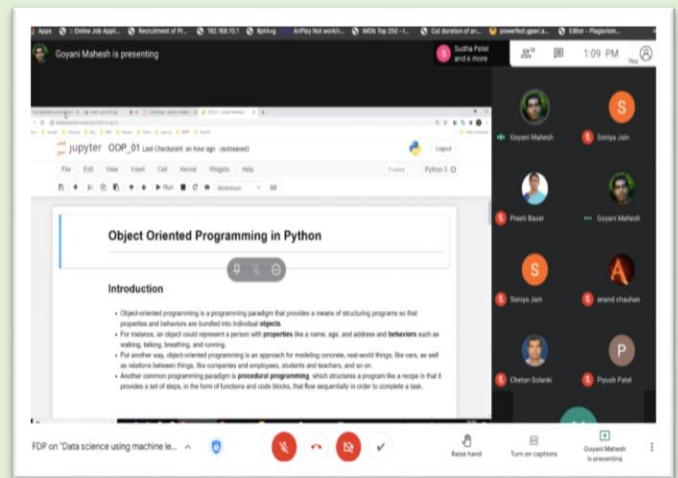
Assistant Professor, GEC-Modasa

### Institution:

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Gujarat, India.

Mail:- mgoyani@gmail.com,

Contact no.:-8487993919



This session gave hands on training which covered basics concepts of Class, Methods, Inheritance, Single level inheritance and Multilevel inheritance.

## ONLINE LECTURE SESSIONS

**Session - 1 | Day-3**

**Prof. B V Buddhadev**

Retd. Professor & HOD

Information Deptt. Govt. Of Gujarat

**Session - 2 | Day-3**

**Prof. B V Buddhadev**

Retd. Professor & HOD

Information Deptt. Govt. Of Gujarat

**Session - 3 | Day-3**

**Prof. B V Buddhadev**

Retd. Professor & HOD

Information Deptt. Govt. Of Gujarat

## Session - 1 | Day-3

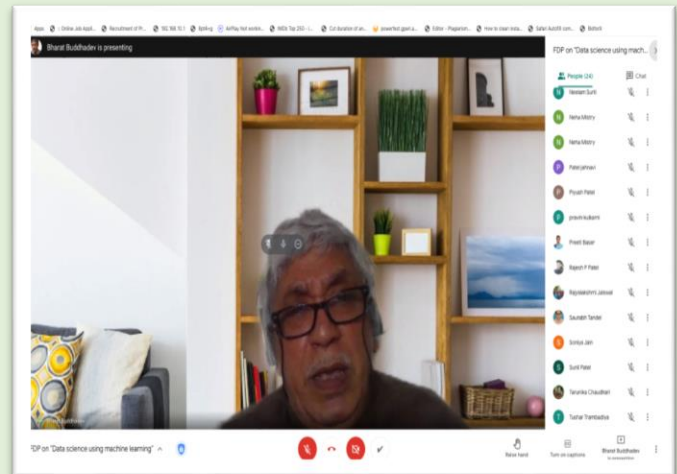
Prof. B V Buddhadev

Retd. Professor & HOD

Information Deptt. Govt. Of Gujarat

### Institution:

Information Department,  
Government of Gujarat,  
Ahmedabad  
Mail:- [bvbld@yahoo.com](mailto:bvbld@yahoo.com),  
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The session covered the aspects of python programming. All the basics and advanced notes were shared and explained. In depth discussion were made on the libraries of Numpy, Pandas, Matplotlib. The charts and visualization was also practiced during this informative session.

## Session - 2 | Day-3

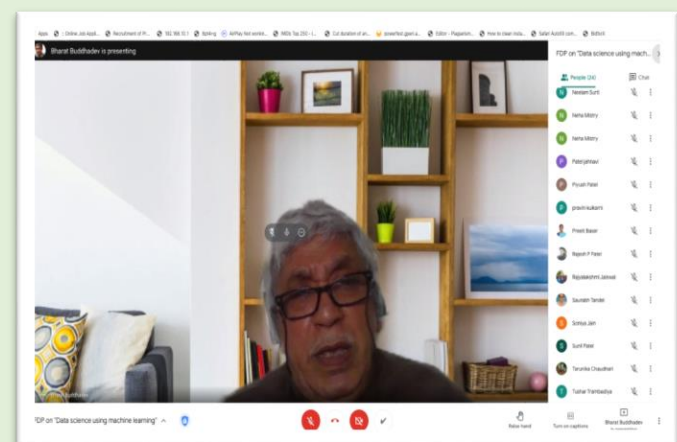
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Contact no.:-9825046179



The session covered the introduction of popular Machine Learning library, SKLEARN and Machine Learning Algorithms and functions.

## Session - 3 | Day-3

Prof. B V Buddhadev

Retd. Professor & HOD

Information Deptt. Govt. Of Gujarat

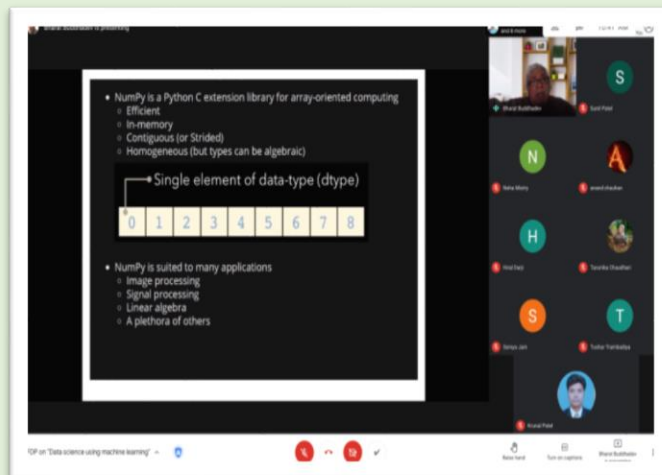
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Contact no.:-9825046179



The session covered hands-on practical programs based on Numpy, Pandas, Matplotlib and Sklearn with their library functions.

**ONLINE LECTURE SESSIONS****Session - 1 | Day-4****Prof. (Dr.) Mahesh Goyani**

Assistant Professor, GEC-Modasa

**Session - 2 | Day-4****Prof. (Dr.) Mahesh Goyani**

Assistant Professor, GEC-Modasa

**Session - 3 | Day-4****Prof. Tushar Trambadiya**

Assistant Professor, GPERI



## Session - 1 | Day-4

Prof. (Dr.) Mahesh Goyani

Assistant Professor, GEC-Modasa

### Institution:

Govt. Engineering College, Modasa  
Gujarat, India.

Mail:- mgoyani@gmail.com,

Contact no.:-8487993919



This informative session covered an introduction to Basics of Machine Learning. The concepts of supervised and unsupervised Machine Learning were also explained by the resource person.

## Session - 2 | Day-4

Prof. (Dr.) Mahesh Goyani

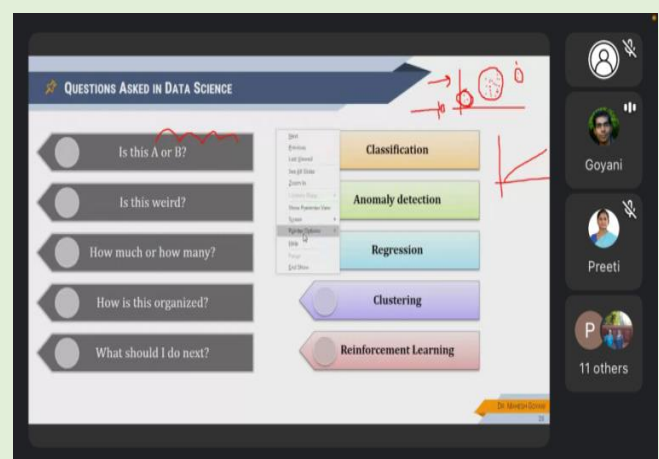
Assistant Professor, GEC-Modasa

### Institution:

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Gujarat, India.

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This session covered the discussion about the need of Simple linear regression and multiple linear regressions as far as Machine Learning is concerned.

## Session - 3 | Day-4

Prof. Tushar Trambadiya

Assistant Professor, GPERI

### Institution:

Gujarat Power Engg. & Res. Institute.

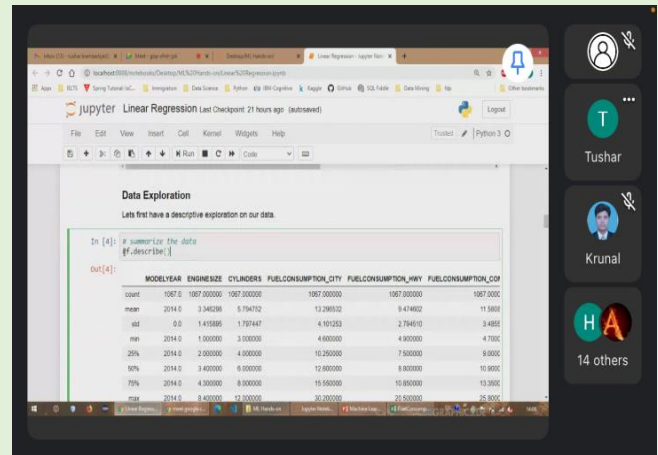
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Ahd-Mehsana Exp.way,

Mehsana, Gujarat 382710.

Mail:- tushar.trambadiya@gperi.ac.in,

Contact no.:- 8000871882



This session covered hands-on practice on a Simple Linear Regression Algorithm with the dataset of cars sold in 2014-2018. The session covered how to predict CO2 emission of a car based on engine size, no of cylinders and other factors.

## ONLINE LECTURE SESSIONS

**Session - 1 | Day-5**

**Dr. Devang Pandya**

Assistant Professor

Adani Institute of Infra. Engg., Ahmedabad

**Session - 2 | Day-5**

**Dr. Devang Pandya**

Assistant Professor

Adani Institute of Infra. Engg., Ahmedabad

**Session - 3 | Day-5**

**Dr. Devang Pandya**

Assistant Professor

Adani Institute of Infra. Engg., Ahmedabad

## Session - 1 | Day-5

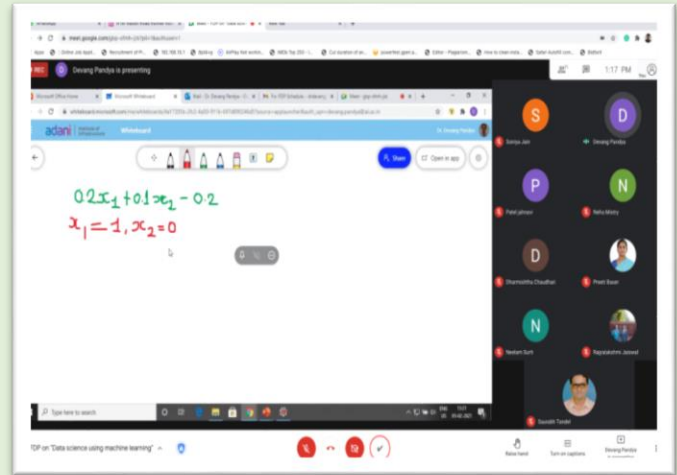
Dr. Devang Pandya

Assistant Professor

Adani Institute of Infra. Engg., Ahmedabad

### Institution:

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Shantigram Township,  
Nr Vaishnodevi Circle, SG Highway,  
Ahmedabad-382421.  
Mail:- devang.pandya@aii.ac.in,  
Contact no.:- 8238059728



This session covered an introduction of Neural Networks and application of neural networks in the fields like medical, aerospace, software industries.

## Session - 2 | Day-5

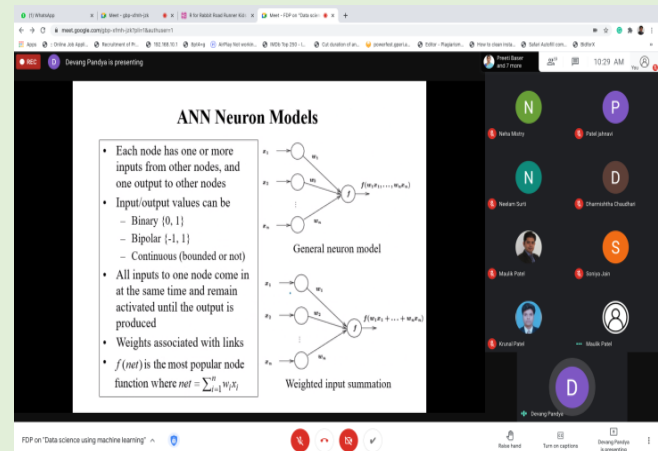
Dr. Devang Pandya

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The session covered different aspects of the Artificial Neural Network. How the problem is solved using the Artificial Neural Network. The Use of ANN in predicting disease from the symptoms.

## Session - 3 | Day-5

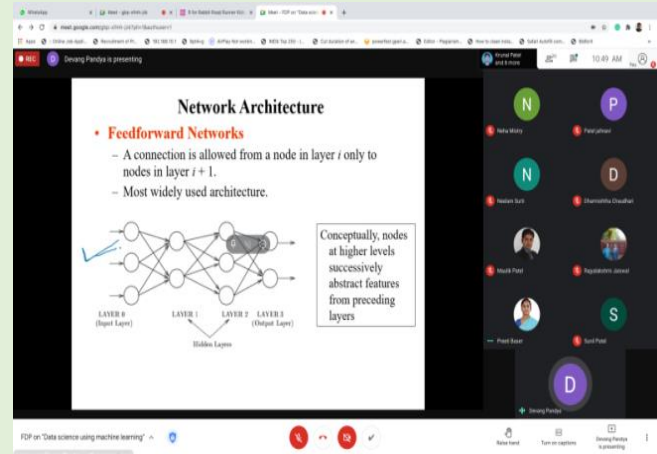
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Mail:- devang.pandya@aii.ac.in,  
Contact no.:- 8238059728



The session covered hands-on session to build artificial neural networks from scratch.

## ONLINE LECTURE SESSIONS

**Session - 1 | Day-6**

**Dr. Amit Mahesh Joshi**

Assistant Professor

Malaviya National Institute of Technology, Jaipur

**Session - 2 | Day-6**

**Dr. Amit Mahesh Joshi**

Assistant Professor

Malaviya National Institute of Technology, Jaipur

**Session - 3 | Day-6**

**Dr. Amit Mahesh Joshi**

Assistant Professor

Malaviya National Institute of Technology, Jaipur



## Session - 1 | Day-6

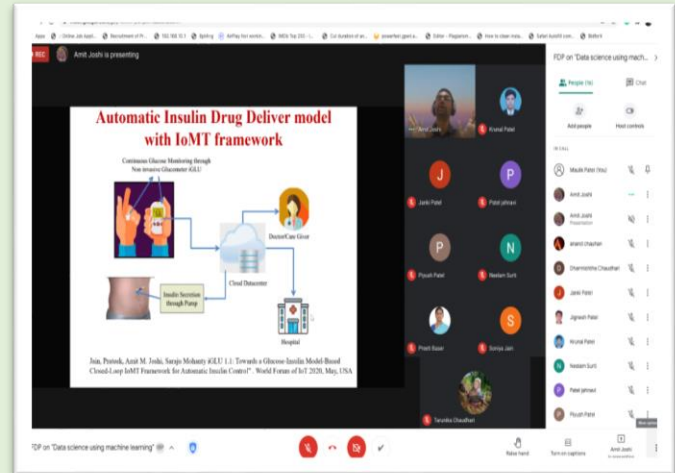
Dr. Amit Mahesh Joshi

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Malaviya National Institute of Technology, Jaipur

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Rajasthan - 302017.  
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The session covered the use of Machine Learning Algorithms in medical industry to find solutions of complex problems.

## Session - 2 | Day-6

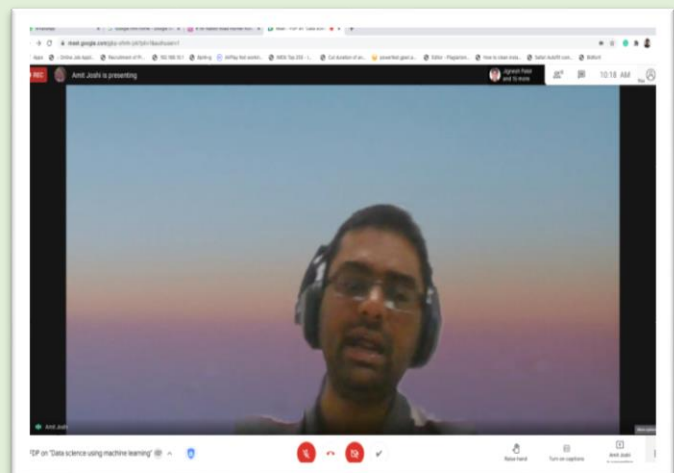
Dr. Amit Mahesh Joshi

Assistant Professor

Malaviya National Institute of Technology, Jaipur

### Institution:

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Rajasthan - 302017.  
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The session covered the use of linear regression, classification and clustering techniques to find solution of complex problems.

## Session - 3 | Day-6

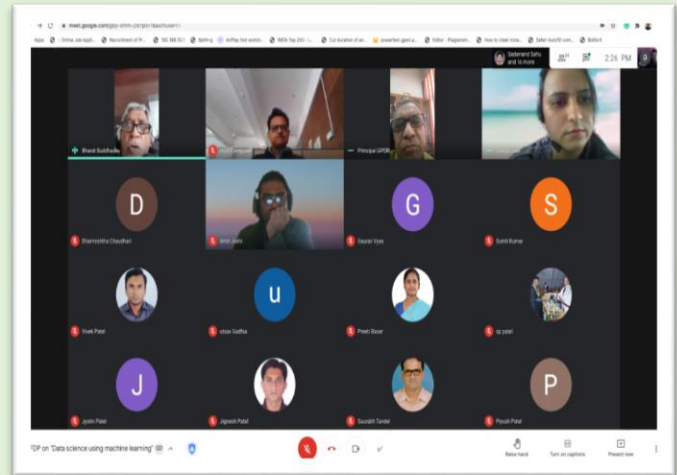
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The session covered different types of experiments on basic regression, k-means clustering and support vector machine.

## VALEDICTORY SESSION

In the final session of the Faculty Development Program, Prof B V Buddhadev (Retired Professor and HoDat Government Of Gujarat - Information Department, Ahmedabad, Gujarat, India) was invited as a Chief Guest.

Prof B V Buddhadev conveyed that the college has made a very good effort in the period of COVID-19 by organizing such FDP. It converts challenges into opportunities, and has also suggested that the participants and researchers should participate regularly in this type of research oriented Faculty Development Program to promote the quality of research.

On this occasion, Guest of Honour Dr. A. M. Prabhakar (Principal-GPERI) expressed that the FDP Program was successful in achieving its goal, which was reflected by the constant comments and praise by the participants. He expressed his gratitude to the resource persons, organizing team, participants and everyone who contributed to the FDP.

Some participants like Prof Sanjay Patel (Asst Prof, GEC, Patan), Prof. Dharmishtha Chaudhari (Asst. Prof., R. N. G. Patel Institute of Technology) and Prof. Preeti Baser (Associate Prof., KIRC, Kalol) shared their thoughts and experiences during the program.

Vote of thanks was delivered by Prof Soniya Jain, Asst. Prof., GPERI and coordinator of the Faculty Development Program.

## PROGRAM OUTCOME

The aim of this Faculty Development Program was to explain the use of Data Science technology and making attendees aware about the development of various applications using it. As these topics are the demand for today's industry and society, there is a need to explore the research opportunities in the field of automation. This Faculty Development Program has provided a unique platform for enhancing the knowledge of the faculty members who are doing research or planning to do research in the mentioned area.

As a result of attending the FDP, the participants shall develop relevant Programming Abilities. They shall demonstrate the proficiency with statistical analysis of data. Preparing models based on data and executing statistical analysis with professional statistical software can be easily achieved by the participants of this FDP.

The participants shall be able to apply data science concepts and methods learned during the FDP to solve problems in real world context and they shall also be able to communicate effective, feasible and optimal solutions to the problems faced by the society.

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