

A Report on  
Online faculty development program on  
**Machine Learning, Deep Learning &  
Visualization**

(21<sup>st</sup> March to 28<sup>th</sup> March, 2022)

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



# INTRODUCTION

Machine Learning, Deep Learning and Visualization technologies are indispensable in this information era. The program was designed in such away for six days so as to cater the needs of attendees to make them aware of various machine learning and Deep Learning algorithms and their usage in the real world scenarios. It also covered how to utilize these technologies for the development of various applications. There is a need to explore research opportunities in this field. This FDP provides a unique platform for enhancing the knowledge of the faculty members who are already doing or planning to do research in the field of Machine Learning, Deep Learning and Visualization. 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/svd-romr-dvd>



**Gujarat  
Technological  
University**  
ESTD - 2007



**All India  
Council for  
Technical  
Education**



**Gujarat Power  
Engineering and  
Research  
Institute**

**AICTE- GTU Sponsored Online Faculty Development Program**

## Machine Learning, Deep Learning and Visualization (21-28 March)

### INAUGURATION CEREMONY

21st Mar 2022 | 9:45 am
Link:<https://meet.google.com/svd-romr-dvd>

				
Prof. (Dr.) Navin Sheth Vice Chancellor - GTU	Dr. K.N. Kher Registrar - GTU	Dr. A.M. Prabhakar Principal - GPERI	Prof. (Dr.) S. D. Panchal Director - GSET - GTU	Prof. B. V. Buddhadev Retired Prof & HOD CE Department
				
Mr. Harshal Trivedi CEO - Tusker & Softvan Pvt Ltd	Dr. Chintan Shah Data Scientist - ContractPodAi	Dr. Ankit Shah HOD - Data Science & AI - SKU	Dr. Sachin Sharma Asst. Prof. - IAR	Mr. Pinal Patel Research Manager Raapid.ai
				
Prof. Dvijesh Bhatt Asst. Prof. - NU	Dr. Mahesh Goyani Asst. Prof. - GEC Modasa	Prof. Tushar Trambadiya Asst. Prof. - CE - GPERI	Prof. Soniya Jain Asst. Prof. - CE - GPERI	Prof. Maulik Patel Asst. Prof. - CE - GPERI

## OBJECTIVE AND COURSE CONTENT

To explain the use of Machine Learning, Deep Learning and Visualization technologies in this information era. The aim is to cater the needs of attendees to make them aware of various machine learning and Deep Learning algorithm and their usage in the real world scenarios. It also covers how to utilize these technologies for the development of various applications. There is a need to explore research opportunities in this field. This FDP will provide a unique platform for enhancing the knowledge of the faculty members who are already doing or planning to do research in the field of Machine Learning, Deep Learning and Visualization.

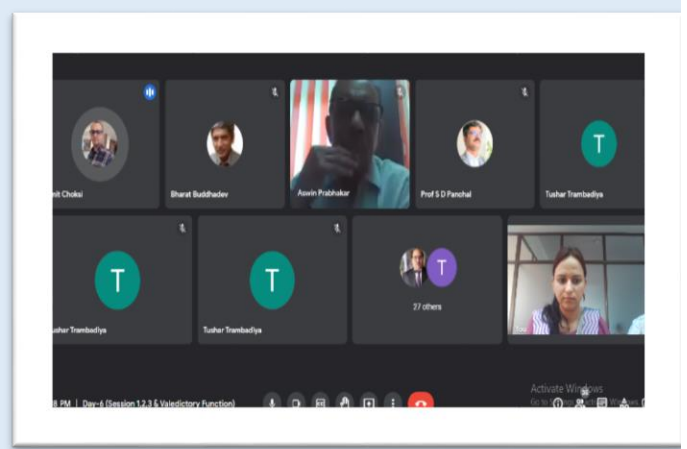
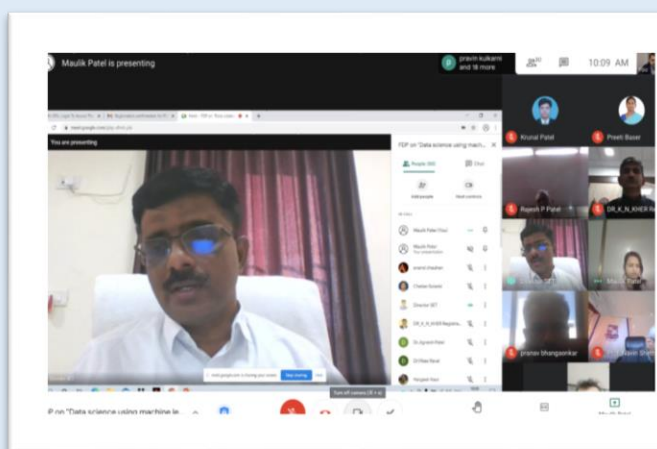
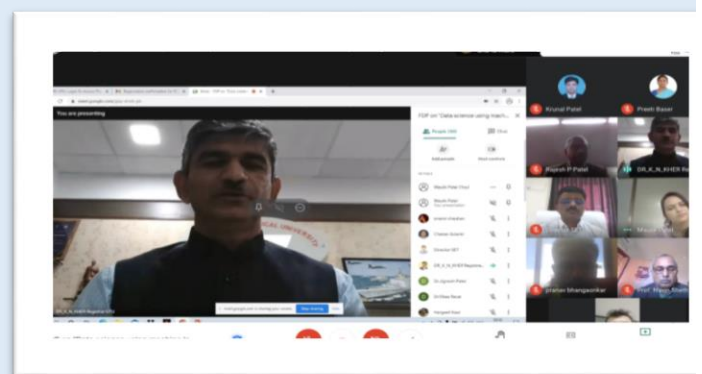
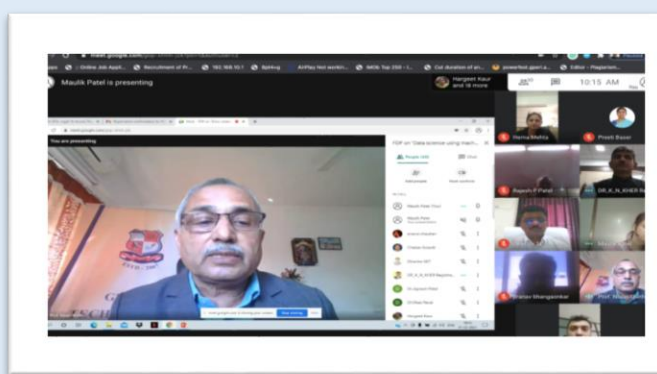
- Introduction of Machine Learning and Deep Learning
- Machine Learning Vs Deep Learning Use cases
- Environmental Setup, Tools and various Libraries of Machine Learning & Deep Learning
- Machine Learning algorithms
- Neural Network & Artificial Neural Network Concepts
- Types of Artificial Neural Networks & Forward backward propagation, Activation functions
- Natural Language Processing Concepts and its use case
- Deep Learning Algorithm- Convolution Neural Network
- Object Detection and Face detection
- Weight Optimization Techniques, Hyper parameter tuning
- Visualization library of Python seaborn, matplotlib, Folium, Bokeh
- Visualization tools: tableau
- National Education Policy

## INAUGURAL SESSION

The inauguration of the Faculty Development Program began on 21.03.2022 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 and Special Guest. Prof. Soniya Jain (Coordinator) briefed and explained all the rules and regulations to be followed during 6 days of the program. Prof. Tushar Tambadiya (Coordinator) gave technical information regarding online lectures. Dr. A. M. Prabhakar (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. Soniya Jain**

Assistant Professor, GPERI

**Session - 2 | Day-1**

**Dr. Sachin Sharma**

Assistant Professor, IAR

**Session - 3 | Day-1**

**Dr. Ankit Shah**

HOD, Data Science & AI, SKU

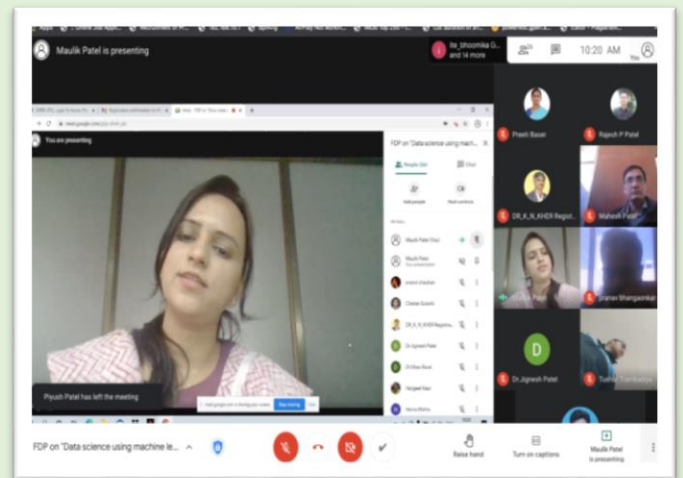
## Session - 1 | Day-1

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.



The first session of the first day was conducted by Prof. Soniya Jain. This session gave a brief introduction about deep learning and machine learning and data visualization.

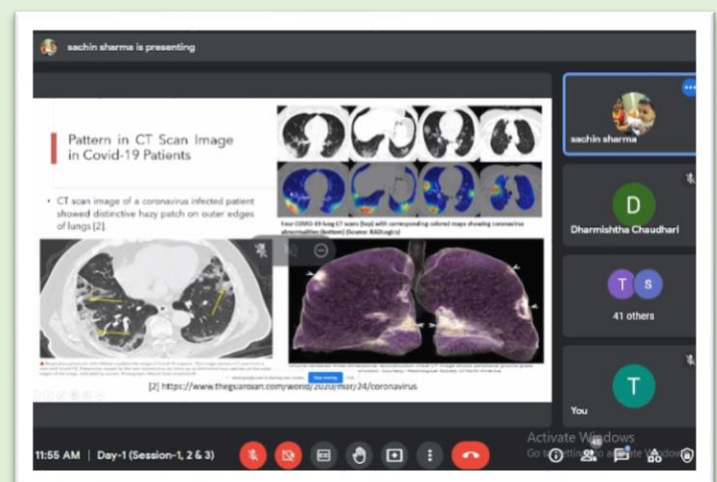
## Session - 2 | Day-1

Dr. Sachin Sharma

Assistant Professor, IAR

### Institution:

Assistant Professor,  
Institute of Advanced Research.  
Near PDPU, Gandhinagar, Gujarat 382710.  
Email: Sharma.f@gmail.com  
Contact no.:- 9773280814



In the Second session of the first day Dr. Sachin Sharma, introduced all the participants to Data Science. He described whereabouts of data science and machine learning. He gave thorough explanations about Deep Learning Use Cases and compared it with Machine Learning Use Cases. The session provided insights about how the technology can be beneficial & useful in Medical & health care.

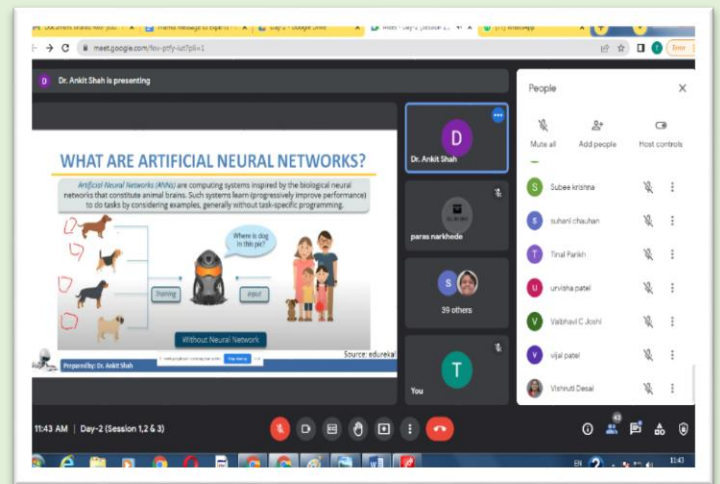
## Session - 3 | Day-1

Dr. Ankit Shah

HOD, Data Science & AI, SKU

### Institution:

Head of AI & Data Science Dept.,  
Sakalchand Patel University  
Email:Shah\_ankit101@yahoo.co.in  
Contact no.:- 9824584855



This session covered in depth discussion about basic concepts classifications and clustering algorithms. It was an informative session on how classification techniques work in different areas.

## ONLINE LECTURE SESSIONS

**Session - 1 | Day-2**

**Mr. Harshal Trivedi**

Founder & CEO, Tusker & Softvan Pvt. Ltd.

**Session - 2 | Day-2**

**Dr. Ankit Shah**

HOD, Data Science & AI, SKU

**Session - 3 | Day-2**

**Dr. Ankit Shah**

HOD, Data Science & AI, SKU



## Session - 1 | Day-2

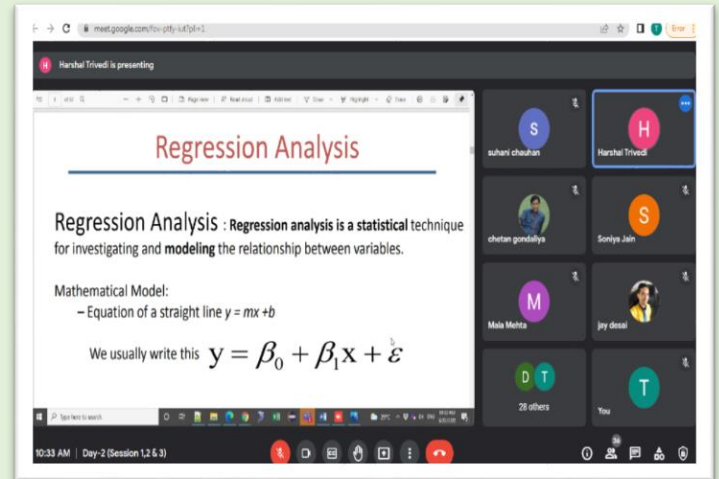
Mr. Harshal Trivedi

Founder & CEO, Tusker & Softvan Pvt. Ltd.

### Institution:

Tusker AP & Softvan Pvt.Ltd,  
Gujarat, India.

Contact no.:- 9428503923



This session covered all the basics of Machine Learning algorithms- Regression. The session was focussed on Regression techniques and their usage to predict future values based on the inputs provided.

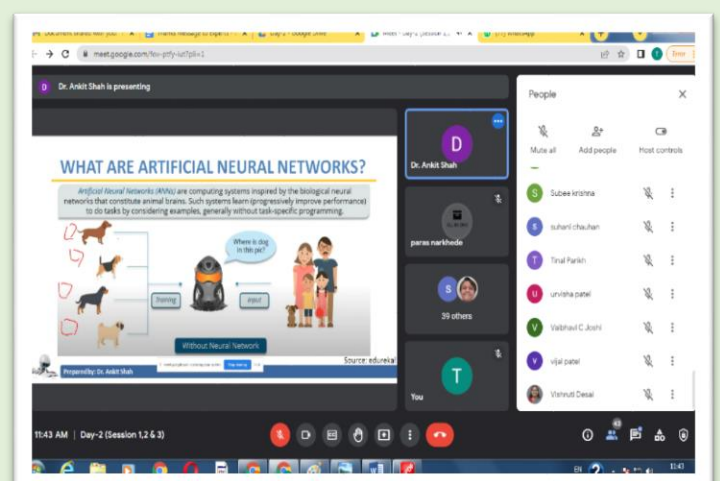
## Session - 2 | Day-2

Dr. Ankit Shah

HOD, Data Science & AI, SKU

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Contact no.:- 9824584855



This session covered in depth discussion about basic concepts of Neural Network & Artificial Neural Network Concepts.

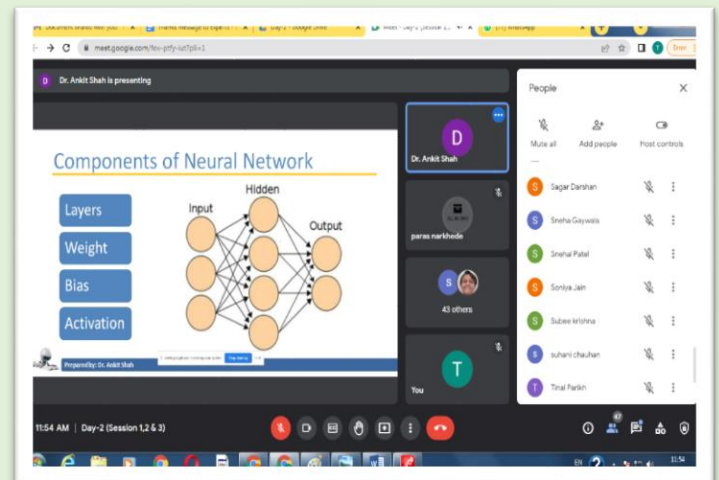
## Session - 3 | Day-2

Dr. Ankit Shah

HOD, Data Science & AI, SKU

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Contact no.:- 9824584855



This session gave hands on training which covered basics concepts of Regression and clustering algorithms.

## ONLINE LECTURE SESSIONS

### Session - 1 | Day-3

**Prof. B V Buddhadev**

Retd. Professor & HOD

Information Deptt. Govt. Of Gujarat

### Session - 2 | Day-3

**Prof. Dvijesh Bhatt**

Asst. Professor, CED,

Nirma University, Ahmedabad

### Session - 3 | Day-3

**Prof. Dvijesh Bhatt**

Asst. Professor, CED,

Nirma University, Ahmedabad

## Session - 1 | Day-3

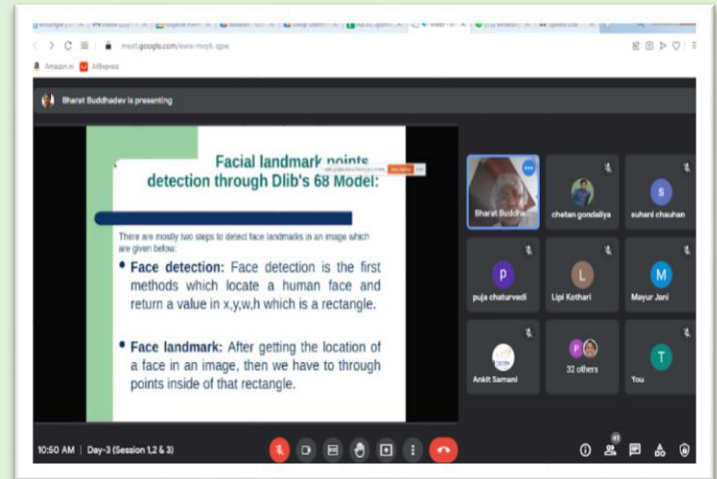
Prof. B V Buddhadev

Retd. Professor & HOD

Information Deptt. Govt. Of Gujarat

### Institution:

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Government of Gujarat,  
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This session covered face detection, Type of ANN, forward backward propagation. It was an informative session on How to Perform different operations of Face detection.

## Session - 2 | Day-3

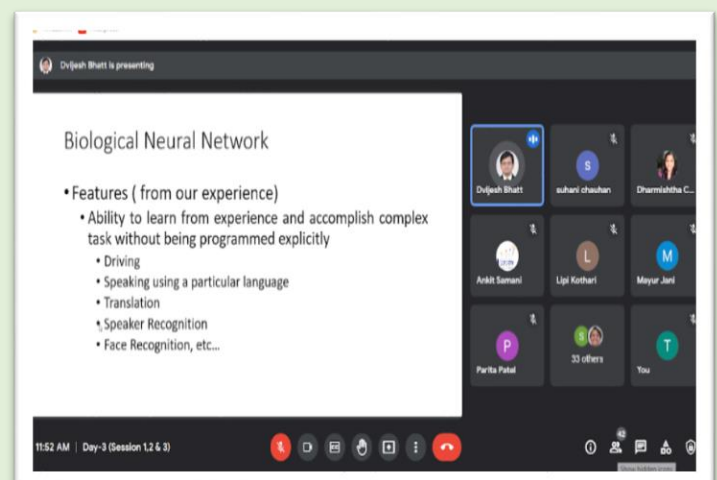
Prof. Dvijesh Bhatt

Asst. Professor, CED,

Nirma University, Ahmedabad

### Institution:

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Nirma University, Ahmedabad  
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The session covered the Types of Artificial Neural Networks & Forward backward propagation, Activation functions.

## Session - 3 | Day-3

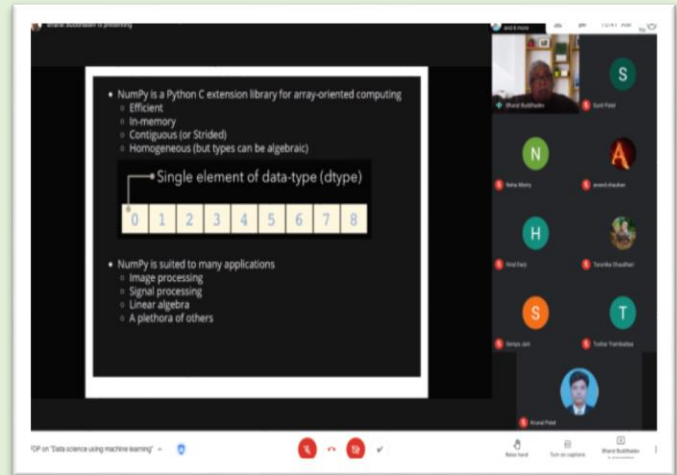
Prof. Dvijesh Bhatt

Asst. Professor, CED,

Nirma University, Ahmedabad

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Nirma University, Ahmedabad  
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Contact no.:- 9725985288



The session covered hands-on practical programs based on Neural Network and its frameworks.



**ONLINE LECTURE SESSIONS****Session - 1 | Day-4****Mr. Pinal Patel**

Research Manager, Raapid.AI, Ahmedabad

**Session - 2 | Day-4****Dr. Chintan Shah**

Data Scientist, PHRAZOR

**Session - 3 | Day-4****Dr. Chintan Shah**

Data Scientist, PHRAZOR

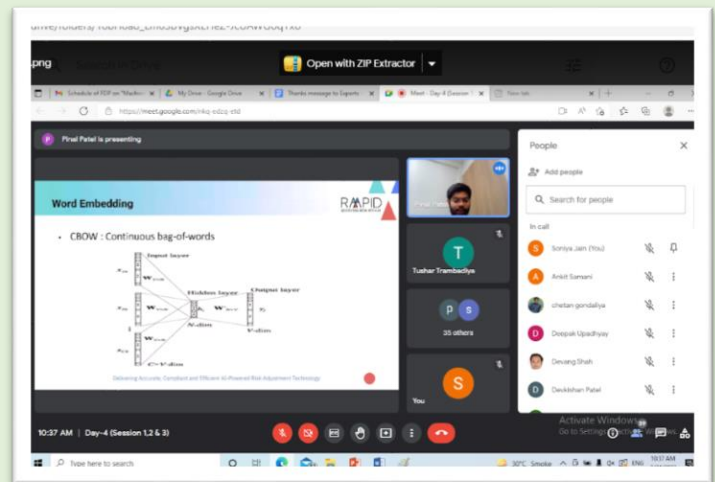
## Session - 1 | Day-4

Mr. Pinal Patel

Research Manager, Raapid.AI, Ahmedabad

### Institution:

Research Manager,  
Raapid.ai, Ahmedabad  
Email: pinal@raapid.ai  
Contact : 9586239303



This informative session covered an introduction to Natural Language Processing Concepts and its use case. primal concepts of Natural language processing and working of the NLP framework. The session provided a lot of insights on how NLP helps the learning process of machines to understand our regular languages.

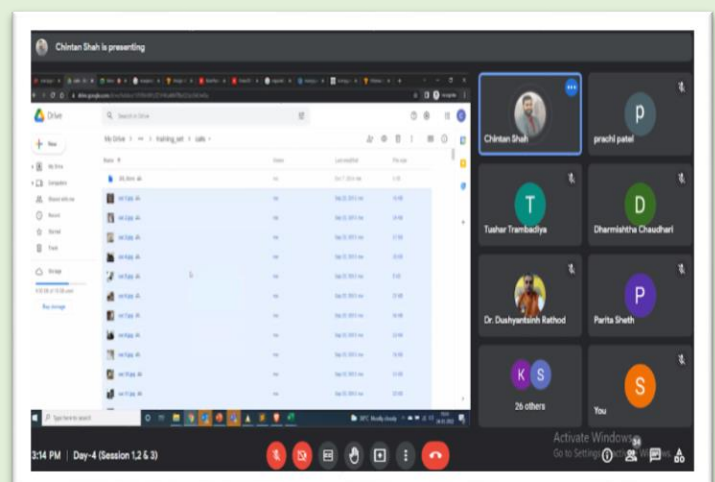
## Session - 2 | Day-4

Dr. Chintan Shah

Data Scientist, PHRAZOR

### Institution:

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Gujarat, India.  
Mail:- chintan.shah84@gmail.com,  
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This session covered the discussion about Deep Learning Algorithm-Convolution Neural Network as far as Machine Learning is concerned.

## Session - 3 | Day-4

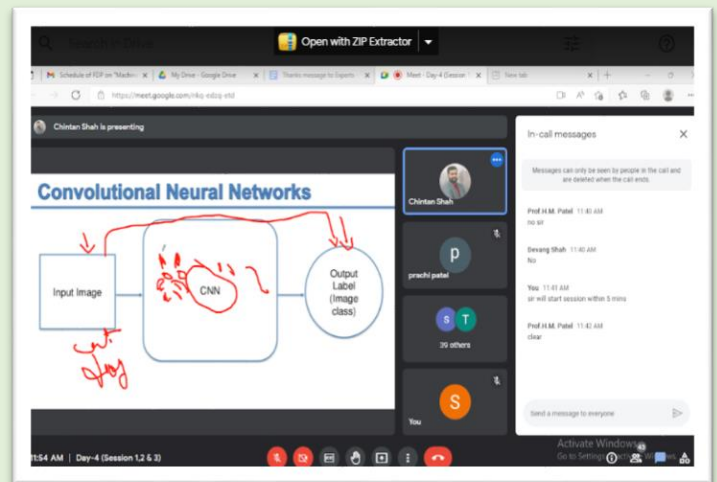
Dr. Chintan Shah  
Data Scientist, PHRAZOR

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Phrazor by vPhrase,  
Gujarat, India.

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

Contact no.:-9428045980



This session covered hands-on practice on Hands on Session on Deep Learning Algorithms- CNN.

## ONLINE LECTURE SESSIONS

**Session - 1 | Day-5**

**Prof. Tushar Trambadiya**

*Assistant Professor, GPERI*

**Session - 2 | Day-5**

**Prof. Maulik Patel**

*Assistant Professor, GPERI*

**Session - 3 | Day-5**

**Prof. Tushar Trambadiya**

*Assistant Professor, GPERI*

## Session - 1 | Day-5

Prof. Tushar Trambadiya

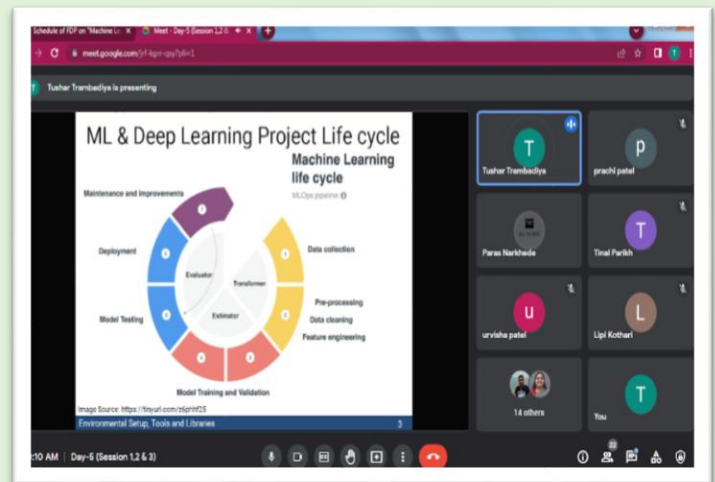
Assistant Professor, GPERI

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Ahd-Mehsana Exp.way, Mehsana, Gujarat  
382710.

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

Contact no.:- 8000871882.



The session covered different aspects of Environmental Setup, Tools and Libraries of Machine Learning & Deep Learning.

## Session - 2 | Day-5

Prof. Maulik Patel

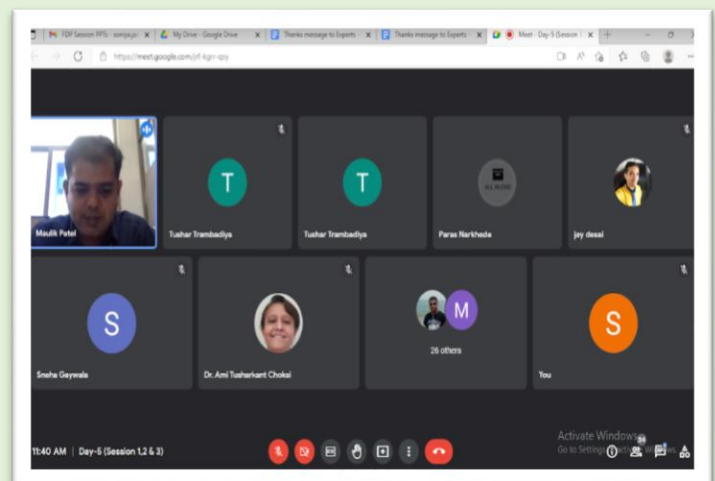
Assistant Professor, GPERI

### Institution:

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Gujarat 382710.

Mail:- maulik.patel@gperi.ac.in,

Contact no.:-9601566386.



The session covered hands-on session Visualization tools : tableau.



## Session - 3 | Day-5

Prof. Tushar Trambadiya

Assistant Professor, GPERI

**Institution:**

Gujarat Power Engg. & Res. Institute.  
Nr. Mevad Toll-booth,  
Ahd-Mehsana Exp.way, Mehsana,  
Gujarat 382710.  
Mail:- tushar.trambadiya@gperi.ac.in,  
Contact no.:- 8000871882.



This detailed session in data science covered Visualization library of Python seaborn, matplotlib, Folium, Bokeh.

**ONLINE LECTURE SESSIONS****Session - 1 | Day-6****Prof. (Dr.) Mahesh Goyani**

Assistant Professor, GEC-Modasa

**Session - 2 | Day-6****Prof. (Dr.) Mahesh Goyani**

Assistant Professor, GEC-Modasa

**Session - 3 | Day-6****Prof. (Dr.) S D Panchal**

Director,

Graduate School Of Engg. &amp; Technology, GTU

## Session - 1 | Day-6

Prof. (Dr.) Mahesh Goyani

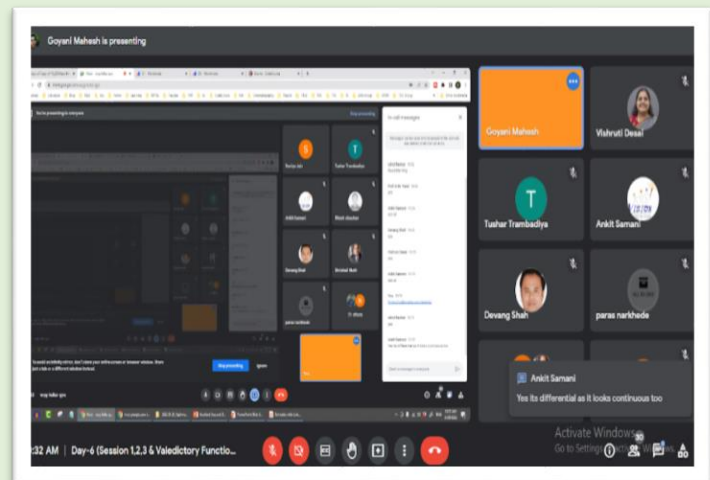
Assistant Professor, GEC-Modasa

### Institution:

Govt. Engineering College, Modasa  
Gujarat, India.

Mail:- mgoyani@gmail.com,

Contact no.:-8487993919



The session covered Weight Optimization Techniques, Hyper parameter tuning.

## Session - 2 | Day-6

Prof. (Dr.) Mahesh Goyani

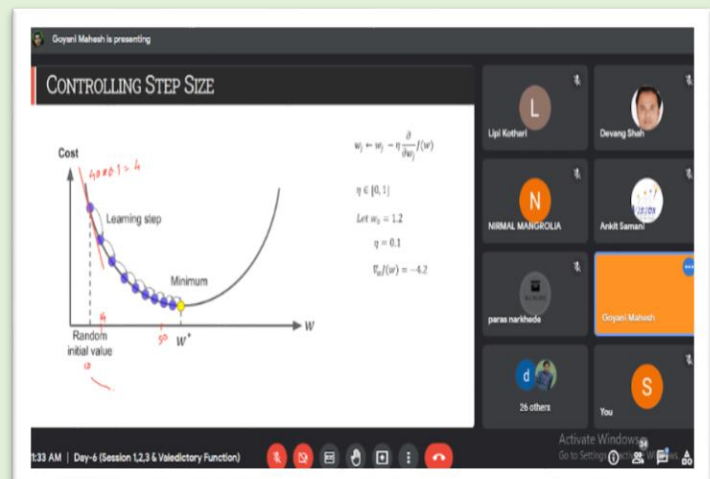
Assistant Professor, GEC-Modasa

### Institution:

Govt. Engineering College, Modasa  
Gujarat, India.

Mail:- mgoyani@gmail.com,

Contact no.:-8487993919



The session covered Hands on practices about Optimization techniques.

Session - 3 | Day-6

Prof. (Dr.) S D Panchal

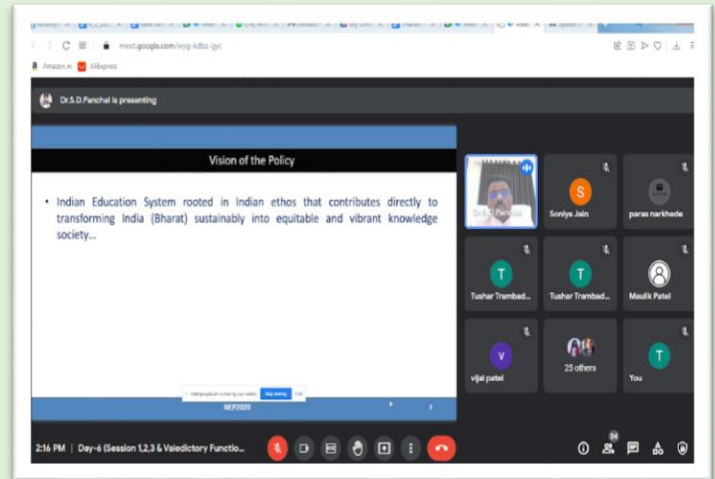
Director,

Graduate School Of Engg. & Technology, GTU

**Institution:**

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GTU , Ahmedabad

Mail:- [sdpanchal@gtu.edu.in](mailto:sdpanchal@gtu.edu.in),  
Contact no.:- 9428062077



The session covered the detailed discussion about National Education Policy. It showed the importance of this policy in shaping our future generations of India.

## 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 appreciated the college for making very good efforts of organizing such FDP. It converts challenges into opportunities, and has also suggested that the participants and researchers should participate regularly in these type of research oriented Faculty Development Program to promote the quality of research.

On this occasion, 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 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 Machine Learning, Deep Learning and Visualization Data Science technologies 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.

Participants were able to understand the latest tools and technologies used by industries. In addition to that they are also made aware about various tools and technologies pertaining to Machine Learning, Deep Learning and Visualization.

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Prepared By:

Prof. Soniya Jain, Coordinator (FDP)

GPERI, Mehsana