



## Event Report

on

### Three Days Workshop on “Learning AI using MATLAB”

07<sup>th</sup> – 09<sup>th</sup> June, 2021

**MBIT** *DesignTech* **CVM UNIVERSITY**

**Madhuben & Bhanubhai Patel Institute of Technology**  
(A Constituent College of CVM University)

**MBIT Organize**  
a Three Days Workshop  
in Association with DesignTech Systems Pvt. Ltd. on  
**“AI with MATLAB”**

**7<sup>TH</sup> - 9<sup>TH</sup> JUNE, 2021**

**Mr. Dhiraj Jagtap**  
Application Engineer  
MathWorks(MATLAB),  
DesignTech Systems Pvt. Ltd.

**Register Now** <https://bit.ly/3fStDQE> **[SCAN ME]**

**MBIT, BEYOND VITHAL UDHYOG NAGAR,  
NEW VALLABH VIDYANAGAR, ANAND - GUJARAT**

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Organized By: -

Madhuben & Bhanubhai Patel Institute of Technology  
(A Constituent College of CVM University), New Vallabh Vidyanagar



## PROGRAMME SCHEDULE

DAY - 1 (07 June ,2021)	
TIME	SESSION
10:00 AM - 10:30 AM	<b>Inauguration</b>
10:30 AM - 12:00 Noon	<b>Session - 1</b> <b>Mr. Dhiraj Jagtap</b> (Application Engineer MathWorks (MATLAB), DesignTech Systems, Pvt. Ltd., Ahmedabad) <b>Topic:</b> Working with the MATLAB User Interface, working with MATLAB Variables and Expressions, Writing Script Files, Live Editor, working with advanced plotting, Data Import and Export and fitting, Data Analysis, How to create GUI (MATLAB app designer tool)

DAY - 2 (08 June, 2021)	
TIME	SESSION
10:30 AM - 12:00 Noon	<b>Session - 1</b> <b>Mr. Dhiraj Jagtap</b> (Application Engineer MathWorks (MATLAB), DesignTech Systems, Pvt. Ltd., Ahmedabad) <b>Topic:</b> What is AI & How it's Done? Applications of Machine Learning, What is Machine Learning? Types of Machine Learning: Supervised, Unsupervised. Machine Learning Workflow. <b>Demo:</b> Train a model to predict Diabetes

**DAY - 3 (09 June, 2021)**

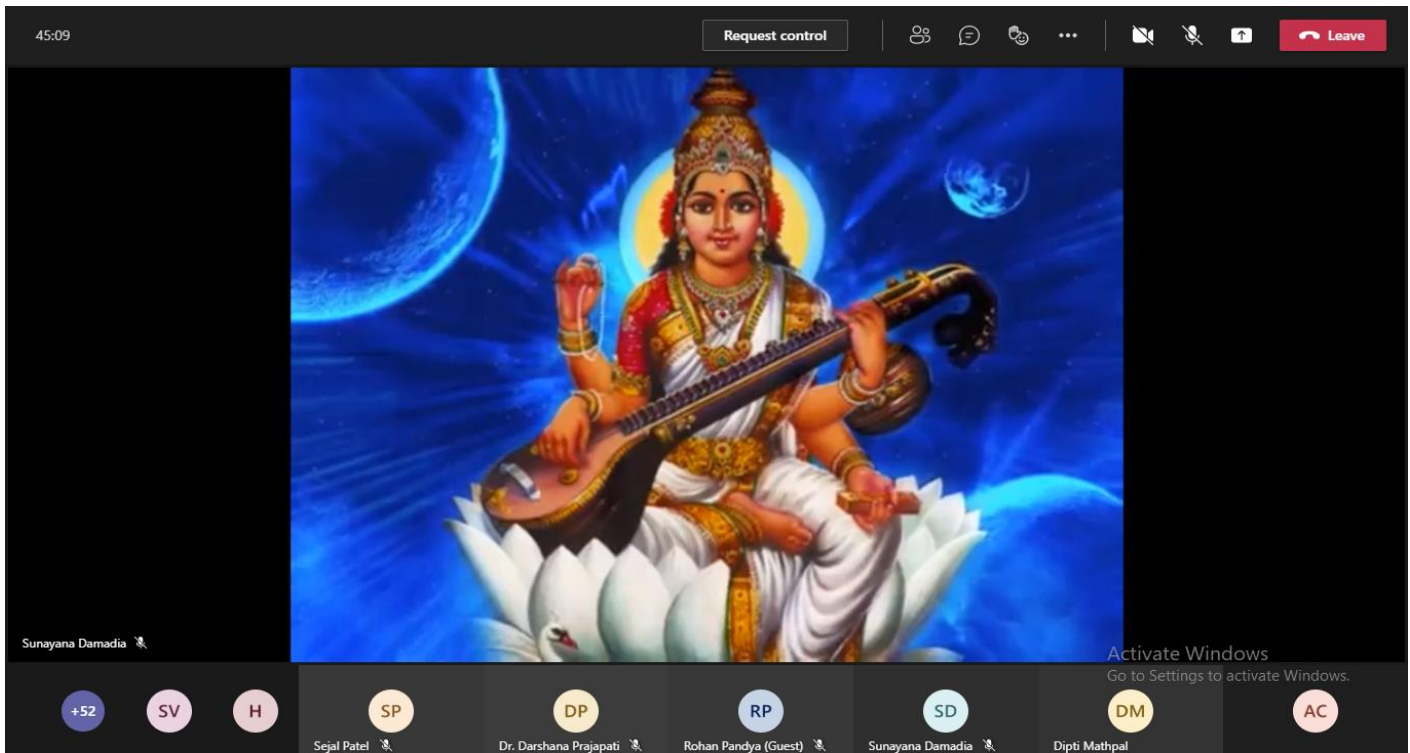
TIME	SESSION
10:30 AM - 12:00 Noon	<b>Session - 1</b> <b>Mr. Dhiraj Jagtap</b> (Application Engineer MathWorks (MATLAB), DesignTech Systems, Pvt. Ltd., Ahmedabad) <b>Topic:</b> <b>What is Deep learning? Applications of Deep Learning, what are different apps available in MATLAB? CNN Based Classification of Images.</b> <b>Demo: Transfer Learning using Deep Network Designer</b>

The aim of this Workshop is to explain the use of Artificial Intelligence technology and making attendees aware about development of various applications using it. The Workshop was conducted through MS Team as an online platform. 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 Workshop will provide a unique platform for enhancing the knowledge of the faculty members and students who are doing research or planning to do research in the mentioned area.

**DAY - 1: (07 June,2021)**

**Inaugural Ceremony was on 07 June,2021 at 10:00AM.**

Inauguration commenced with Welcome Note by **Prof. Dipti Mathpal**. She warmly welcomed the dignitaries and participants. Then blessings of God were taken by playing Saraswati Vandana by Prof. Sunayana Domadia.



In the beginning of the function, the Honorable Chairman of CVM, and President of CVM University, **Er. Shri Bhikhubhai Patel sir** motivated us with his blessings and encouraging words.

After that **Prof. Dr.Archana Nanoty**, Principal, MBIT, gave a brief introduction about how technology has helped us during this pandemic time. She welcomed all the participants of the workshop. She also talked about the importance of Artificial Intelligence and MATLAB. She ended her speech by wishing participants that the workshop will be helpful to them.

After Principal Madam's Speech, **Dr. P M Udani** Director General of CVM University, addressed the participants and shared his views about the importance of this workshop. He discussed about importance of latest technological development considering the present time of COVID-19 pandemic. He also discussed how Information Technology has helped us during this pandemic time.

After that **Prof. Sunayana Domadia**, Assistant Prof., IT Dept., MBIT proposed vote of thanks. She appreciates to all team members who involved organizing this workshop.



50:23

Show participants

Prof. (Dr.) P M UDANI (Guest)

Prof. Dr. Archana Nanoty

Activate Windows  
Go to Settings to activate Windows.

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Workshop on Learning AI using MATLAB

01:03:43

Grid of participants:

- Dipti Mathpal
- Prof. (Dr.) P M U...
- Tapan Patel
- Hitesh Thakwani
- 180630107093
- 12002040701079
- Prof. Dr. Archana
- Niraviraja
- Sunayana Dam
- Jayna Donga
- 12002040701058
- Nisarg Vegad
- Mayur Ayar
- Ankita Chauhan
- Chetan Chudas...
- Darsh Shah (G...
- Shital Gondaliya
- 190630107224
- Sejal Patel
- Jay Raval
- Dr. Dahshana P...
- 12002040701133
- Tushar Shah
- 12002040701109
- 12002040701148
- 12002040701135
- Rohan Pand
- Dr. Bhavesh Ra...
- 201T019
- 20CE208

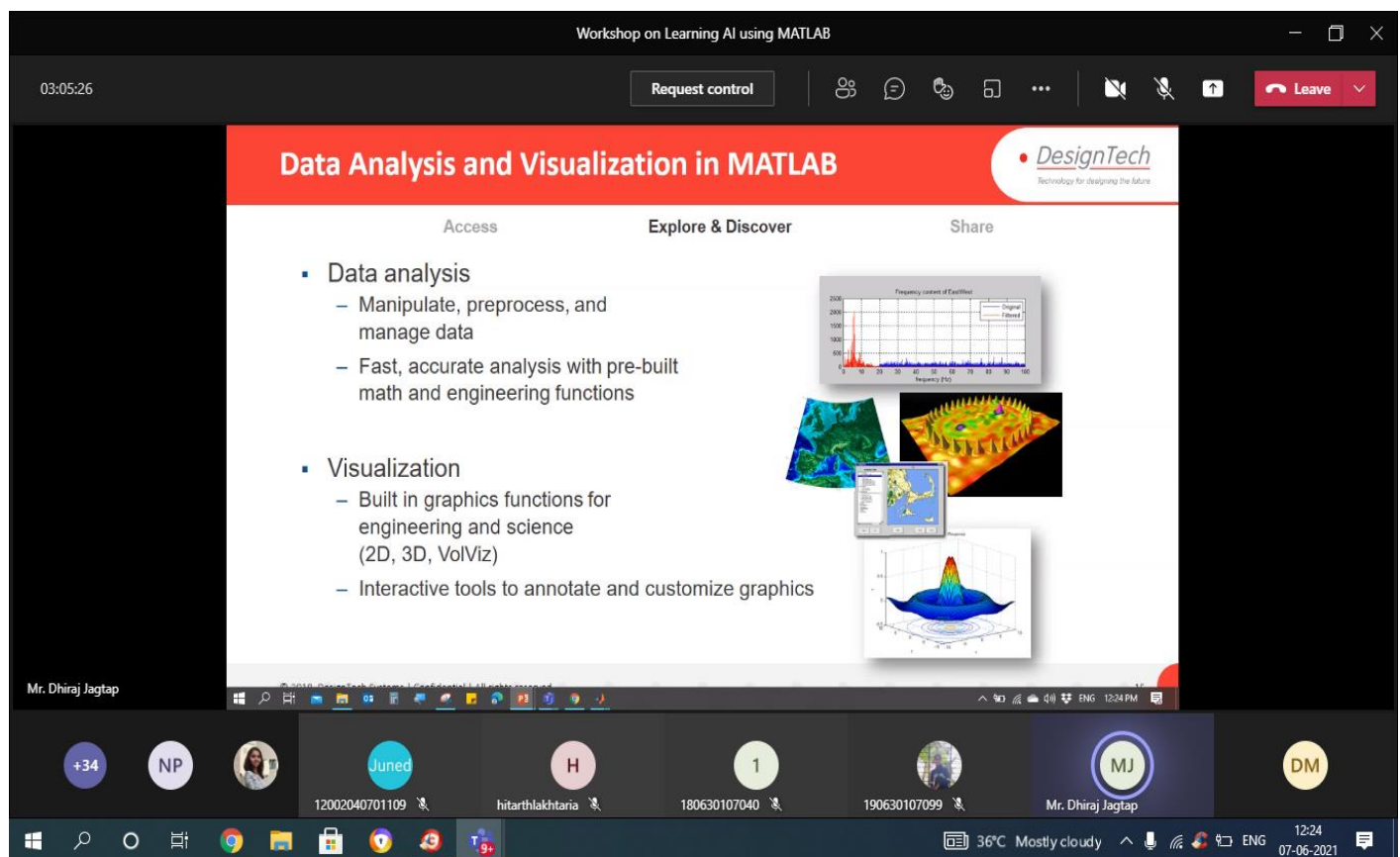
+71 1 P SD

Prof. (Dr.) P M UDANI (Gu... Sunayana Damadia

## DAY – 1: Session – 1 (07, June, 2021)

**Mr. Dhiraj Jagtap** (Application Engineer MathWorks (MATLAB), DesignTech Systems, Pvt. Ltd., Ahmedabad) conducted session on **07, June, 2021** during 10:30 AM to 12:00 Noon. He delivered a talk on Working with the MATLAB User Interface, working with MATLAB Variables and Expressions, Writing Script Files, Live Editor, working with advanced plotting, Data Import and Export and fitting, Data Analysis, how to create GUI (MATLAB app designer tool)

He nicely explained about Artificial Intelligence introduction and its application. He enlightens the session by explaining about Artificial Intelligence as this field has become a fundamental discipline, both in the area of basic research and in the resolution of applied problems, where statistics and computer science intersect. Thus, from the perspective of the data, machine learning, operation research, methods and algorithms, and data mining techniques are aligned to address new challenges characterized by the complexity, volume and heterogeneous nature of data.



Workshop on Learning AI using MATLAB

03:05:26

Request control

Leave

### Data Analysis and Visualization in MATLAB

DesignTech  
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Access Explore & Discover Share

- Data analysis
  - Manipulate, preprocess, and manage data
  - Fast, accurate analysis with pre-built math and engineering functions
- Visualization
  - Built in graphics functions for engineering and science (2D, 3D, VolViz)
  - Interactive tools to annotate and customize graphics

Mr. Dhiraj Jagtap

+34 NP Juned H 1 180630107040 190630107099 Mr. Dhiraj Jagtap DM

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36°C Mostly cloudy 12:24 07-06-2021



12:07

Polynomial

Degree: 1

Robust: Off

☐ Center and scale

Fit Options...

☒ Auto fit

Fit

Stop

MPGCity vs. RatedMPGCity

polynomial fit 1

MPGCity

RatedMPGCity

R-square	DfE	Adj. R-sq	RMSE	# Coeff	Validation Data	Validation SSE	Validation RMSE
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Mr. J

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1

180630107040

Mr. J

DM

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12:07 PM

The screenshot displays a Windows desktop environment. The primary application window is SPSS Statistics, showing a histogram of data with a superimposed normal distribution curve. The histogram's x-axis is labeled 'BANK' and ranges from 0.00 to 1.00. The y-axis is labeled 'Frequency' and ranges from 0 to 100. The normal curve is centered around 0.50. Other windows in the background include a file explorer showing a folder named 'BANK' and a document titled 'BANK.docx'. The taskbar at the bottom contains several icons: a yellow WhatsApp icon, a blue Telegram icon, a green icon with the letter 'L', a blue icon with the letter 'T', and a red icon with a white telephone handset. The system tray on the right shows the date and time as '11:00 AM' and '11/11/2023'.



## DAY - 2: Session - 1 (8 June, 2021)

**Mr. Dhiraj Jagtap** (Application Engineer MathWorks (MATLAB), DesignTech Systems, Pvt. Ltd., Ahmedabad) conducted session on **08, June, 2021** during 10:30 AM to 12:00 Noon. He delivered a talk on What is AI & How it's Done? Applications of Machine Learning, What is Machine Learning? Types of Machine Learning: Supervised, Unsupervised. Machine Learning Workflow. **Demo:** Train a model to predict Diabetes


Machine learning is a hot topic in research and industry, with new methodologies developed all the time. The speed and complexity of the field makes keeping up with new techniques difficult even for experts — and potentially overwhelming for beginners. Session was executed by Different techniques of Machine learning like supervised learning, unsupervised learning, and reinforcement with quite good examples.

Workshop on Learning AI using MATLAB

39:25 Request control

### Case Study

Tata Steel saved 40% energy on cooling towers through software algorithms



**Challenge**  
Tata Steel was looking for a way to improve the efficiency of the CTs, to reduce energy consumption and save costs.

*"If we can reduce the energy consumption of the pump and the cooling fan, then energy will be saved significantly. To do that, we have to install the VFD (Variable Frequency Drive) instead of the control valve. VFD is the final control element," informed -Dr Sarkar*

The Tata Steel Group is among the top global steel companies with an annual crude steel capacity of 27.5 million tones per annum (MTPA). It is a geographically-diversified steel producer, with operations in 26 countries and a commercial presence in over 50 countries.

The Group uses as many as 200 cooling towers (CTs) at its plants across the world. These are medium and high capacity CTs with capacities as high as 1,000 TR (Tons of Refrigeration).

**Solution**  
To do that, a digital twin model of VFD controller was created. The digital model is continuously updated based on data from the real world or the actual plant. This improves the accuracy of the model. When the model was accurate it was easier to make physical controller (VFD) more efficient.

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+19 H MD PR MJ RP DM

POOJA RUPARELIYA Mr. Dhiraj Jagtap Rohan Pandya (Guest)



## Workshop on Learning AI using MATLAB

40:31

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### Other case Studies

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AUTOMOTIVE

BMW

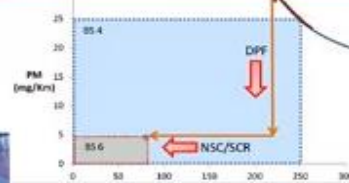
Detecting Oversteering with Machine Learning



AUTOMOTIVE

Mercedes Benz & Dr. Turck

Predictive Maintenance using MATLAB - Pattern Recognition for Time Series Data



AUTOMOTIVE

Honda

Fleet Analytics to build strategies for BS VI Development



SEMICONDUCTORS

ASML

Virtual Metrology Technology for Semiconductor Manufacturing with Machine Learning

<https://www.mathworks.com/solutions/machine-learning/customer-success.html>

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POOJA RUPARELIYA (...)

Mr. Dhiraj Jagtap ...

Rohan Pandya (Guest)

## Workshop on Learning AI using MATLAB

40:42

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### More Data, More Questions, Better Answers

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Machine learning algorithms find natural patterns in data that generate insight and help you to make better decisions and predictions. They are used every day to make critical decisions in medical diagnosis, stock trading, energy load forecasting, and more. Media sites rely on machine learning to sift through millions of options to give you song or movie recommendations. Retailers use it to gain insight into their customers' purchasing behavior.

#### Real World Applications

With the rise in big data, machine learning has become particularly important for solving problems in areas like these:

- Computational finance, for credit scoring and algorithmic trading
- Image processing and computer vision, for face recognition, motion detection, and object detection
- Computational biology, for tumor detection, drug discovery, and DNA sequencing
- Energy production, for price and load forecasting
- Automotive, aerospace, and manufacturing, for predictive maintenance
- Natural language processing



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POOJA RUPARELIYA (...)

Mr. Dhiraj Jagtap ...

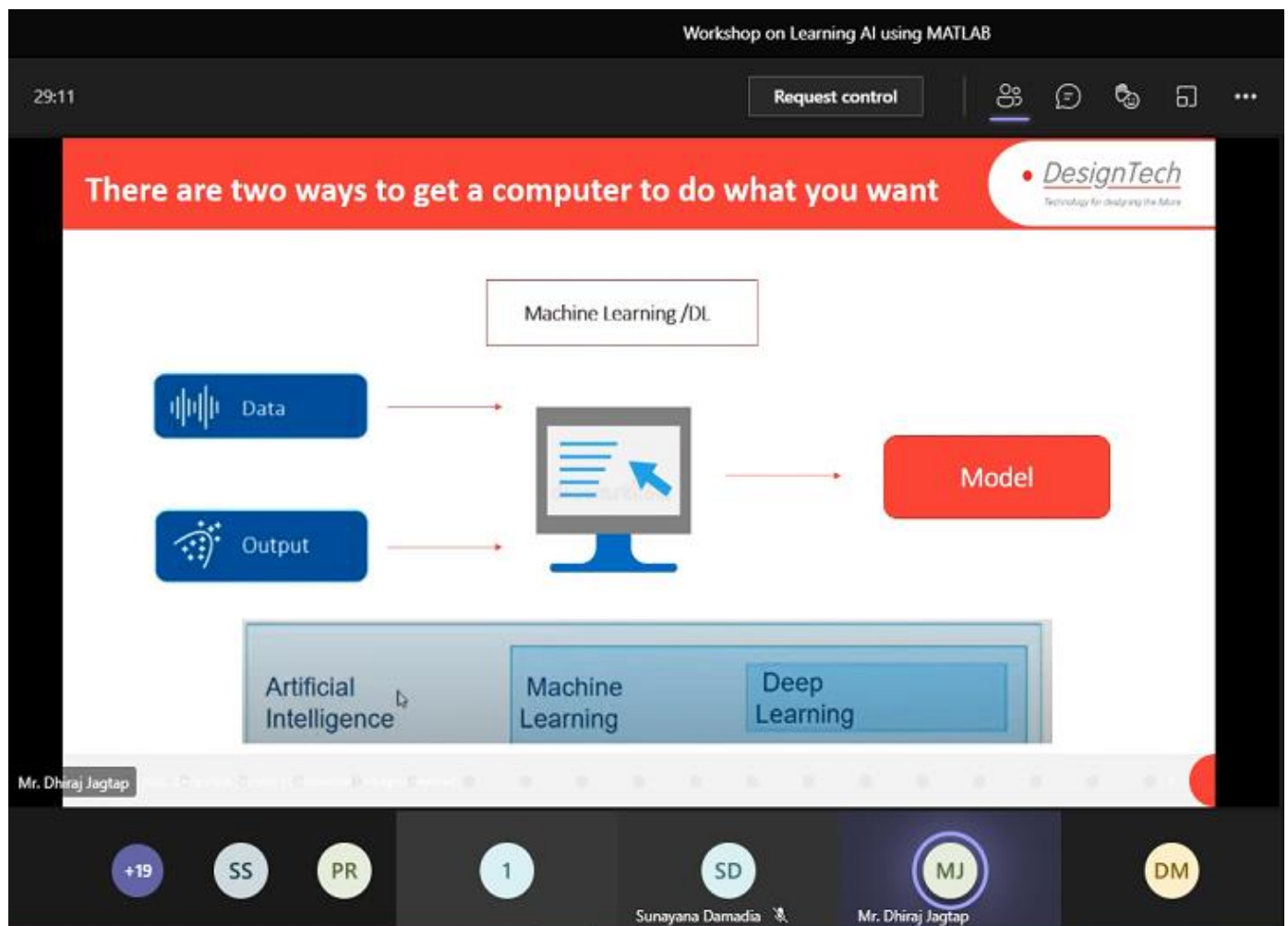
Rohan Pandya (Guest)

### DAY – 3: Session – 1 (09 June, 2021)

**Mr. Dhiraj Jagtap** (Application Engineer MathWorks (MATLAB), DesignTech Systems, Pvt. Ltd., Ahmedabad) conducted session on **09, June, 2021** during 10:30 AM to 12:00 Noon. He delivered a talk on What is Deep learning? Applications of Deep Learning, what are different apps available in MATLAB? CNN Based Classification of Images.

Demo: Transfer Learning using Deep Network Designer

Introduction to Deep Learning and its Applications, Research Topics and Industrial Applications in Data Science and Deep Learning Deep learning is a machine learning technique that teaches computers to do what comes naturally to humans learns by example. Deep learning is a key technology behind driverless cars, enabling them to recognize a stop sign, or to distinguish a pedestrian from a lamppost. In this session expert talked about the key to voice control in consumer devices like phones, tablets, TVs, and hands-free speakers. Deep learning is getting lots of attention lately and for good reason. It's achieving results that were not possible before.



The screenshot shows a presentation slide titled "Workshop on Learning AI using MATLAB". The slide content includes a red banner at the top with the text "There are two ways to get a computer to do what you want" and the DesignTech logo. Below the banner is a diagram illustrating the machine learning process. It shows a box labeled "Machine Learning /DL" at the top. Below it, a central computer monitor icon has two arrows pointing towards it from the left: one from a blue box labeled "Data" and another from a blue box labeled "Output". An arrow points from the monitor to a red box labeled "Model" on the right. At the bottom, there is a horizontal bar with three segments: "Artificial Intelligence", "Machine Learning", and "Deep Learning", with a mouse cursor pointing at the "Artificial Intelligence" segment. The bottom of the screenshot shows a video conference interface with a toolbar containing icons for +19, SS, PR, 1, SD, MJ (highlighted), and DM. Below the toolbar, the names "Sunayana Damadia" and "Mr. Dhiraj Jagtap" are visible.

Workshop on Learning AI using MATLAB

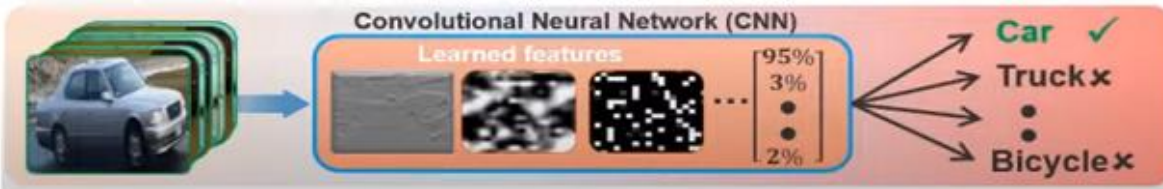
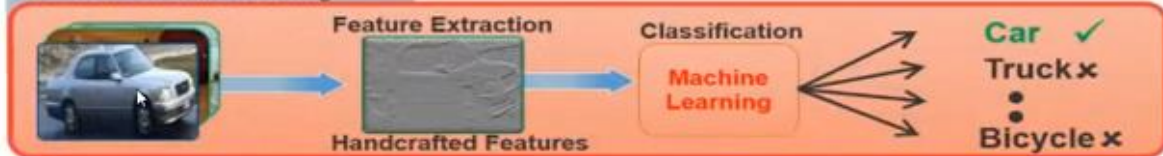
30:11

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Traditional Machine Learning



Deep Learning performs **end-end learning** by learning **features, representations and tasks** directly from images, text and sound

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Sunayana Damadia

Mr. Dhiraj Jagtap