



**Sandip Foundation's  
Sandip Institute of Engineering and Management, Nashik Department  
of Computer Engineering  
Academic Year 2021-22 Sem - II**

**Report on Expert Lecture**

- 1. Event Title: Workshop “ Deep Learning”**
- 2. Event Date: 02/05/2022 (Monday)**
- 3. Event Conduction Duration: 1 day (Timings: 1 pm to 2 pm)**
- 4. Event Venue: Online (Google meet)**
- 5. Event Resource Person Details: Miss Priyanka Shahane, AISSMS, Pune.**
- 6. Name of Event Coordinator: Prof. V. V. Mahale**
- 7. Expected Audience: Students of TE, BE Computer Engineering Department.**
- 8. Number of Participants: 89**
- 9. Course Content:**
  - AI vs. ML vs. DL
  - What is Artificial Intelligence?
  - Example of Artificial Intelligence
  - Applications of Artificial Intelligence
  - What is Machine Learning?
  - Example of Machine Learning
  - Mathematical Model
  - Algorithmic Approach
  - Dataset
  - Environmental Setup
  - Performance Parameter
  - Result
  - Conclusion

**Event Objectives & Outcomes:**

**10. Objectives:**

To make students aware of Deep learning using python

**Outcomes:** Students have learned the concepts related to Artificial intelligence, Machine learning and Deep Learning.

## 11. Photos

This screenshot shows a Google Meet window with a presentation slide titled "Introduction to Deep Learning". The slide is presented by Ms. Priyanka Shahane, an Assistant Professor at the Department of AI & DS, AISMIS IOIT, Pune, on May 2, 2022. The slide content includes the title, presenter information, and the date. The meeting interface shows a grid of participants on the right, including Priyanka Shahane, Sakshi Dushing, Sagar Shinde, Rutuja Shinde, Abhishek Patil, Chandan Patil, Pranav Mankar, Anshana Suryawanshi, 25 Ganesh Vishnu Pa..., 63 Nishant Sabale, 3 others, and You. The bottom of the screen displays the Windows taskbar with the search bar and various application icons.

This screenshot shows a Google Meet window with a presentation slide titled "About Me". The slide is presented by Ms. Priyanka Shahane, an Assistant Professor at the Department of AI & DS, AISMIS IOIT, Pune, on May 2, 2022. The slide content includes a photo of Ms. Priyanka Shahane, her contact information (7796831759, priyankashahane04@gmail.com), and a list of her qualifications and experience. The meeting interface shows a grid of participants on the right, including Priyanka Shahane, 02 Rohan Aherrao, Sagar Shinde, Rutuja Shinde, Dhaneesh Vasalkar, Pratham Singh, 01 Kalyan Aher, Swapnil Dawange, SAURABH MORE, prashant amrutkar, 63 others, and You. The bottom of the screen displays the Windows taskbar with the search bar and various application icons.

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AI vs. ML vs. DL

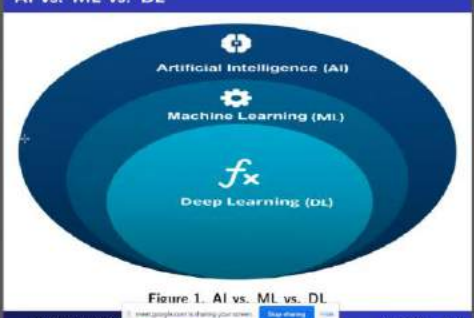


Figure 1. AI vs. ML vs. DL

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Example of Artificial Intelligence

In order to solve this problem we can use machine to capture the picture of number plate and convert it to text format.




Figure 3. Example of AI

Nikita Singh can now join this meeting

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Applications of AI

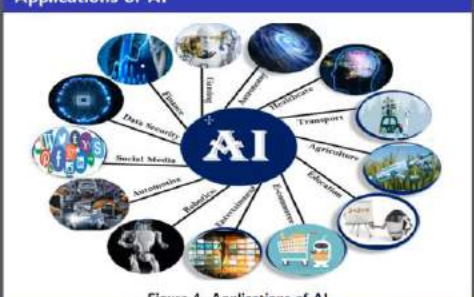


Figure 4. Applications of AI

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Applications of AI




Figure 4. Applications of AI

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Example of Machine Learning

Humans have seen so many dogs and cats, they can identify the difference between two

Dog

Cat

How will a machine identify?

Figure 3. Example of Machine Learning

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Types of Machine Learning: Supervised Learning

Learning algorithm

Step 1: Training

Training data

Model

Test Data

Accuracy

Step 2: Testing

Figure 6. Supervised Learning

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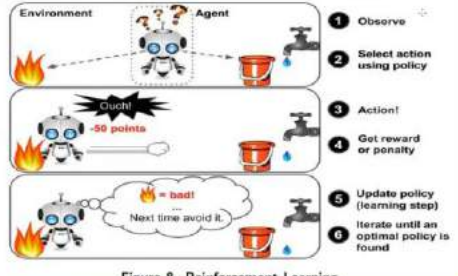
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### Types of Machine Learning: Reinforcement Learning



The diagram illustrates the Reinforcement Learning process. It shows an Agent interacting with an Environment. The process follows these steps: 1. Observe, 2. Select action using policy, 3. Action!, 4. Get reward or penalty, 5. Update policy (learning step), and 6. Iterate until an optimal policy is found. The diagram includes a robot character and a bucket of water, with a speech bubble saying "Clutch! +50 points" and another saying "Next time avoid it!".

Figure 8. Reinforcement Learning

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### Figure 8. Reinforcement Learning

#### Limitations of Machine Learning

- Machine Learning models cannot deal with very high dimensional data.
- Since the machine learning models cannot automatically select the features it becomes difficult to solve complex problems like fingerprint recognition or image recognition

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### What is Deep Learning?

Deep Learning uses multilayered neural networks capable of identifying important features by themselves and learn from large amount of data to solve the complex problems.

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### Example of Deep Learning

Figure 9. Example of Deep Learning

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### Machine Learning vs. Deep Learning

Figure 10. Machine Learning vs. Deep Learning

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FUNCTION		
Linear Function	$f(x) = x$	$(-\infty, \infty)$
Step Function	$f(x) = \begin{cases} 0 & \text{for } x < 0 \\ 1 & \text{for } x \geq 0 \end{cases}$	$[0, 1]$
Sigmoid Function	$f(x) = \sigma(x) = \frac{1}{1 + e^{-x}}$	$(0, 1)$
Hyperbolic Tanjant Function	$f(x) = \tanh(x) = \frac{(e^x - e^{-x})}{(e^x + e^{-x})}$	$(-1, 1)$
ReLU	$f(x) = \begin{cases} 0 & \text{for } x < 0 \\ x & \text{for } x \geq 0 \end{cases}$	$[0, \infty)$
Leaky ReLU	$f(x) = \begin{cases} 0.01 & \text{for } x < 0 \\ x & \text{for } x \geq 0 \end{cases}$	$(-\infty, \infty)$
Swish Function	$f(x) = 2x\sigma(\beta x) = \begin{cases} \beta = 0 & \text{for } f(x) = x \\ \beta \rightarrow \infty & \text{for } f(x) = 2\max(0, x) \end{cases}$	$(-\infty, \infty)$

Table 1. Activation Functions

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### Architecture of Deep Neural Network

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### Summary

	Machine learning	Deep learning
Choose features	Yes	No
Training dataset	Small	Large
Training time	Short	Long
High-end system	No	Yes
Number of algorithms	Many	Few

Table 2. Machine Learning vs Deep Learning

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### Architectural Diagram

Figure 1. Architecture for Existing System, [1].

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Object Detection

Imports and function definitions

Example use

Helper functions for downloading images and for visualization

Apply module

More images

Section

Object Detection

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Table of contents

- Object detection
- Setup
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