Minimax Algorithm in Game Playing | Artificial Intelligence

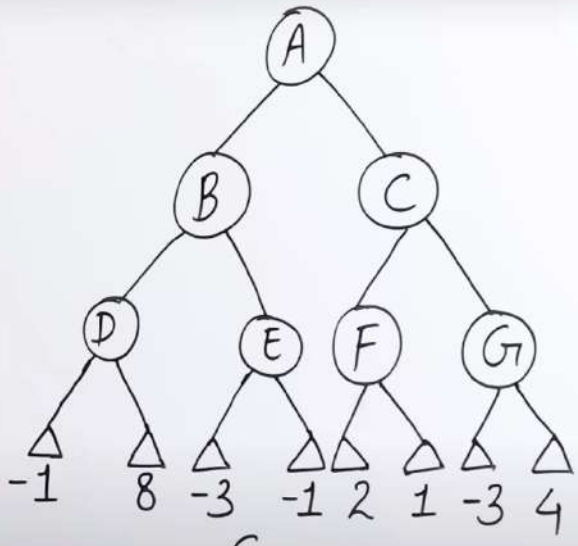
Minimax Algorithm

⇒ Backtracking algorithm

⇒ Best move strategy used

⇒ Max will try to maximize its utility (Best Move)

⇒ Min will try to minimize Utility (Worst move)



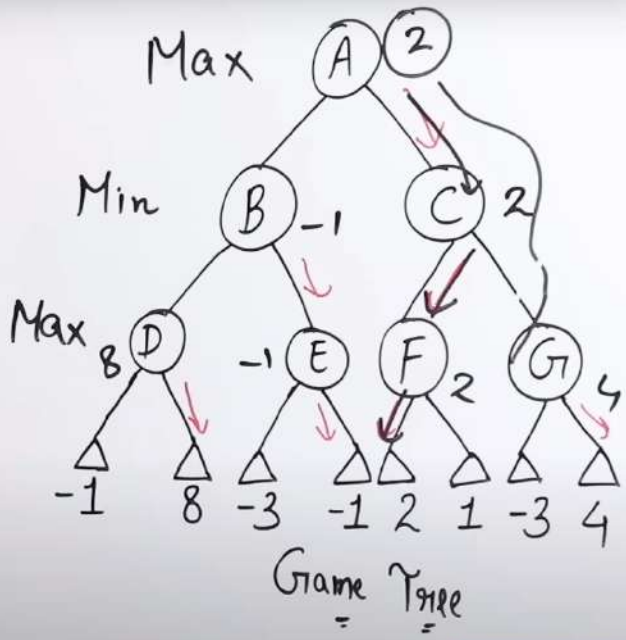
Game Tree

Minimax Algorithm in Game Playing | Artificial Intelligence

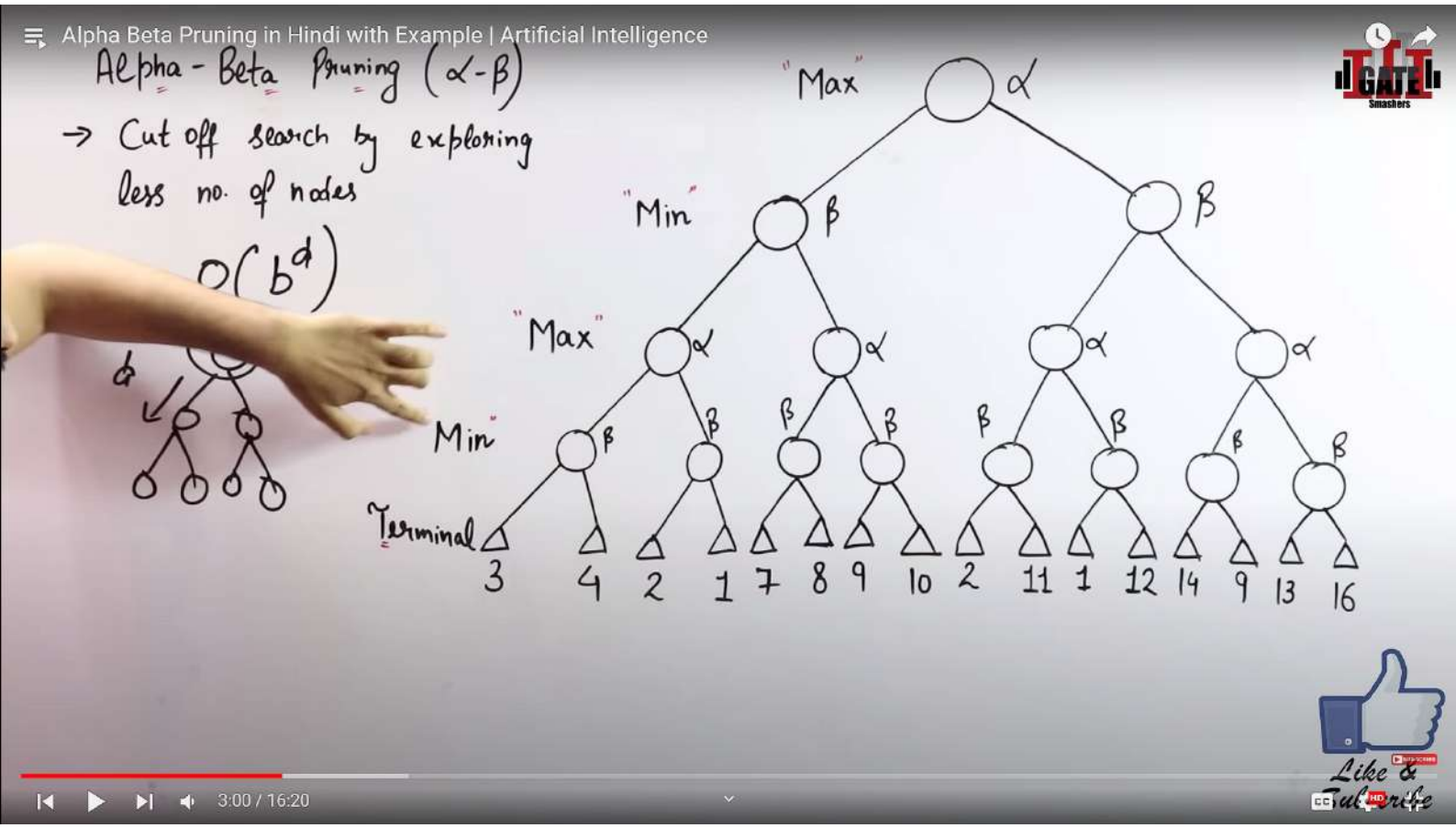
Minimax Algorithm

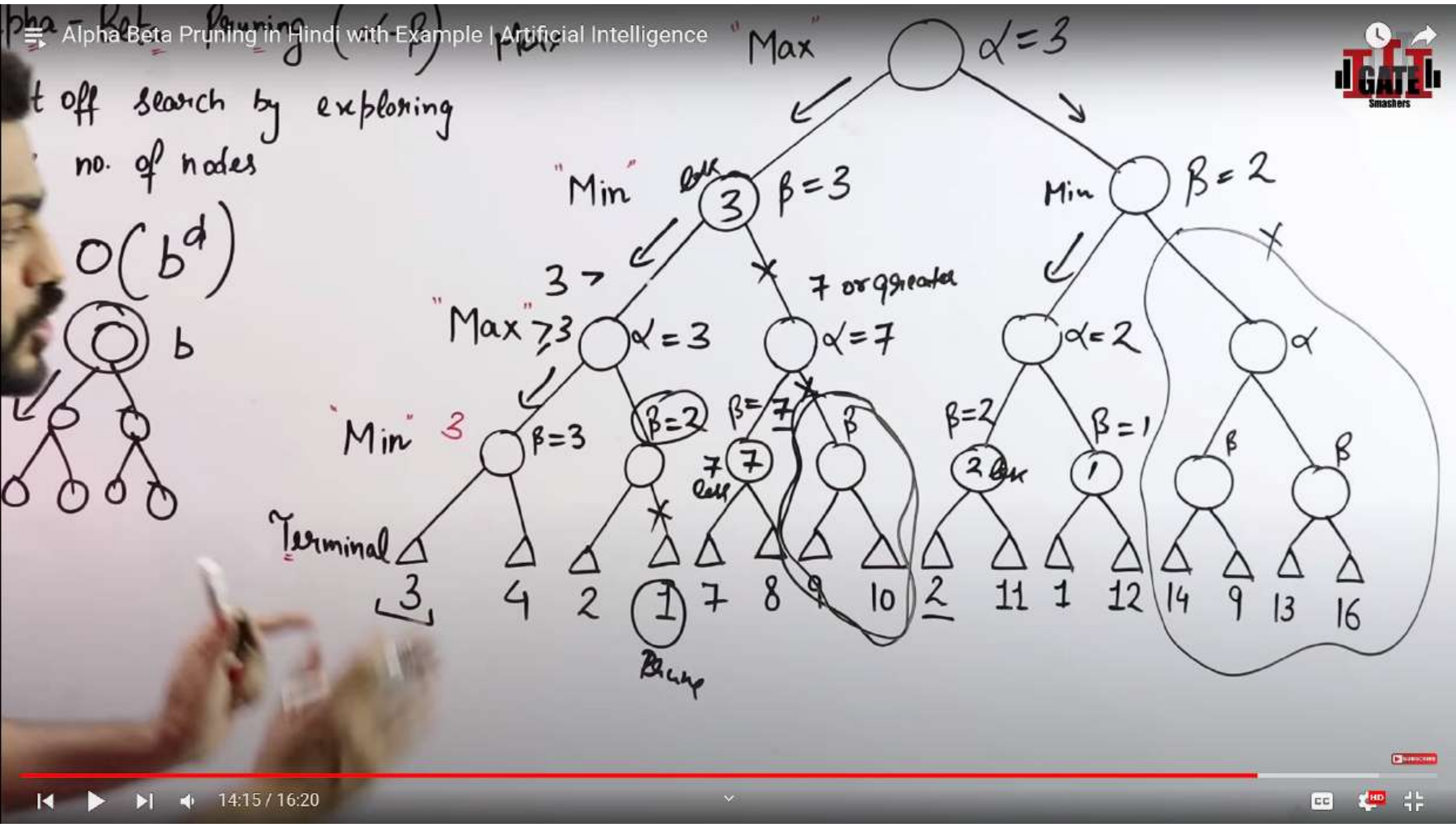
- Backtracking algorithm
- Best move strategy used
- Max will try to maximize its utility (Best Move)
- Min will try to minimize Utility (Worst move)

$= 3^2 = 9$ $O(b^d)$



Game Tree


Alpha Beta Pruning in Hindi with Example | Artificial Intelligence
Alpha - Beta Pruning (α-β)
→ Cut off search by exploring less no. of nodes
O(b^d)
b
"Max"
"Min"
"Max"
"Min"
Terminal
α
β
3 4 2 1 7 8 9 10 2 11 1 12 14 9 13 16
GATE Smashers
Like & Subscribe
3:00 / 16:20



Alpha Beta Pruning in Hindi with Example | Artificial Intelligence
Max
α=3
Min
β=3
β=2
Max
α=3
α=7
α=2
Min
β=3
β=2
β=7
β=1
Terminal
3 4 2 1 7 8 9 10 2 11 1 12 14 9 13 16
7 or greater
O(b^d)
no. of nodes
14:15 / 16:20

L14: Artificial Intelligence Technique | Knowledge Representation, Search Algorithm | AI Lectures

Easy Engineering Classes Free Online Lectures

EEC Classes GGSIPU, UPTU, Mumbai Univ., Pune Univ., GTU, Anna Univ., PTU and Others EEC Classes

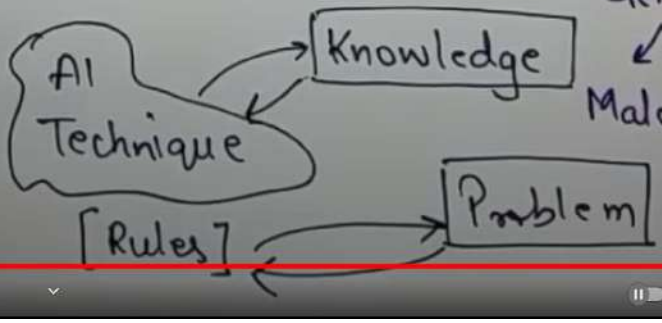
AI Technique: It is a method that exploits knowledge that should be represented in such a way that:

- i) Knowledge Captures Generalization
- ii) Understandable by People.
- iii) Easily modifiable to correct
- iv) Can be used in many situations
- v) Can reduce its volume.

Parts of AI Technique:-

1. **Knowledge Representation:** Used to Capture the knowledge about Real world.
2. **Search Algorithm:** Finding / Searching Solution of the Problem.

Knowledge
- Large in Volume
- Not well formatted



Gender
Male
M, F

4:44 / 5:12

Ques:- Define learning? How does the process of learning achieve? what are the types of learning?

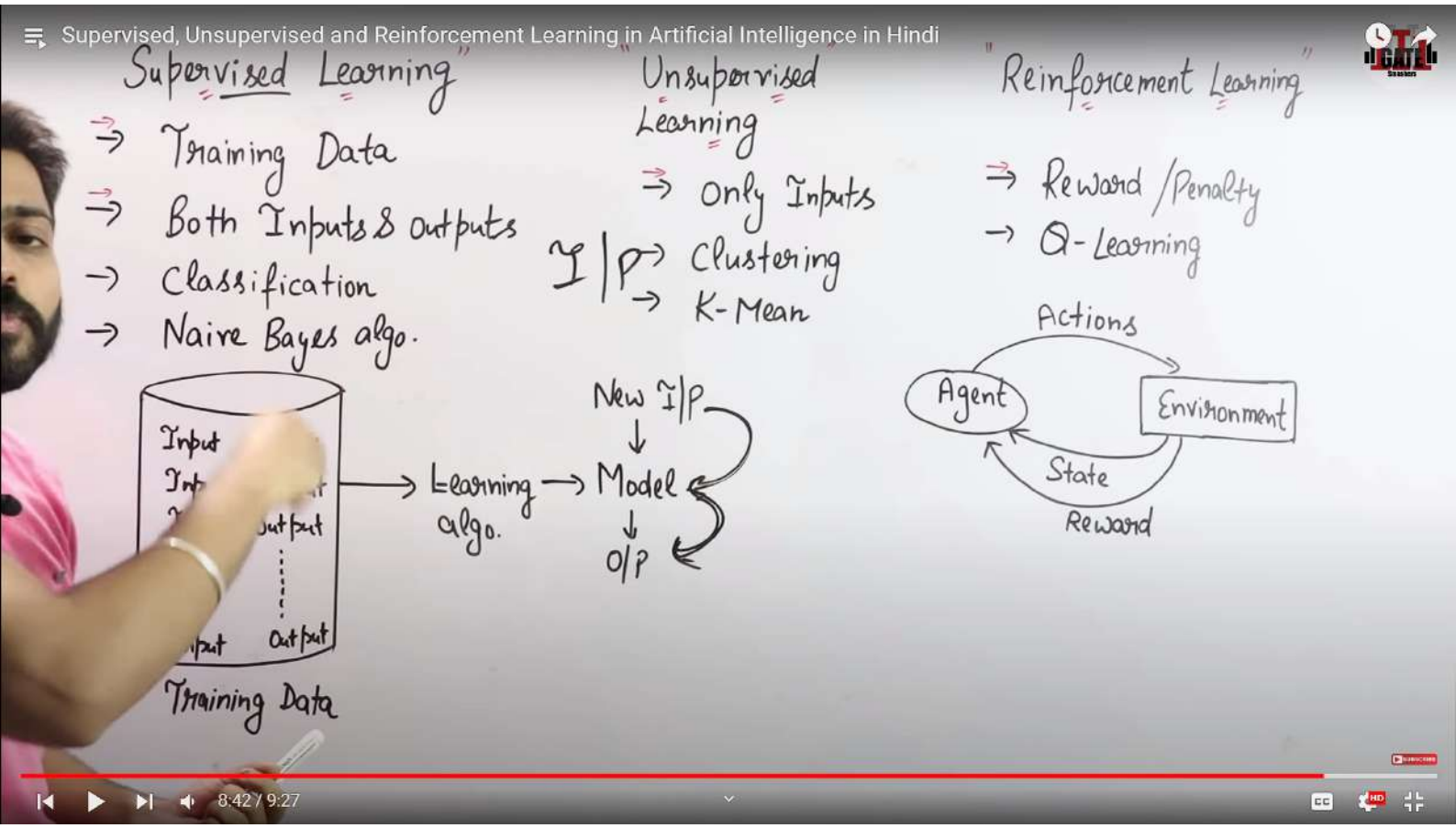
Learning is defined as specialized form of knowledge acquisition. [fact 1 → fact 2 → conclusion].
↳ It is constructing or modifying repⁿ of what is being experienced.

Components of learner system:

① Learning Component: (Main) Acquire knowledge, make changes/improvements to system depending on performance.
② Performance Component: Task is performed by choosing actions that needs to be taken.
③ Problem Generator: Suggests Problems/actions that would lead to Generation of new examples to improve learning.
④ Critic: Gives feedback to the Learner Components.

Learning can be achieved by:

↳ i) Taking Advice.
ii) From observations.
iii) From Examples.
iv) By direct Instruction.
v) By analyzing differences.
vi) By deduction
vii) By explaining experiences
viii) Using Relevant Infoⁿ.
ix) By Correcting mistakes.
x)

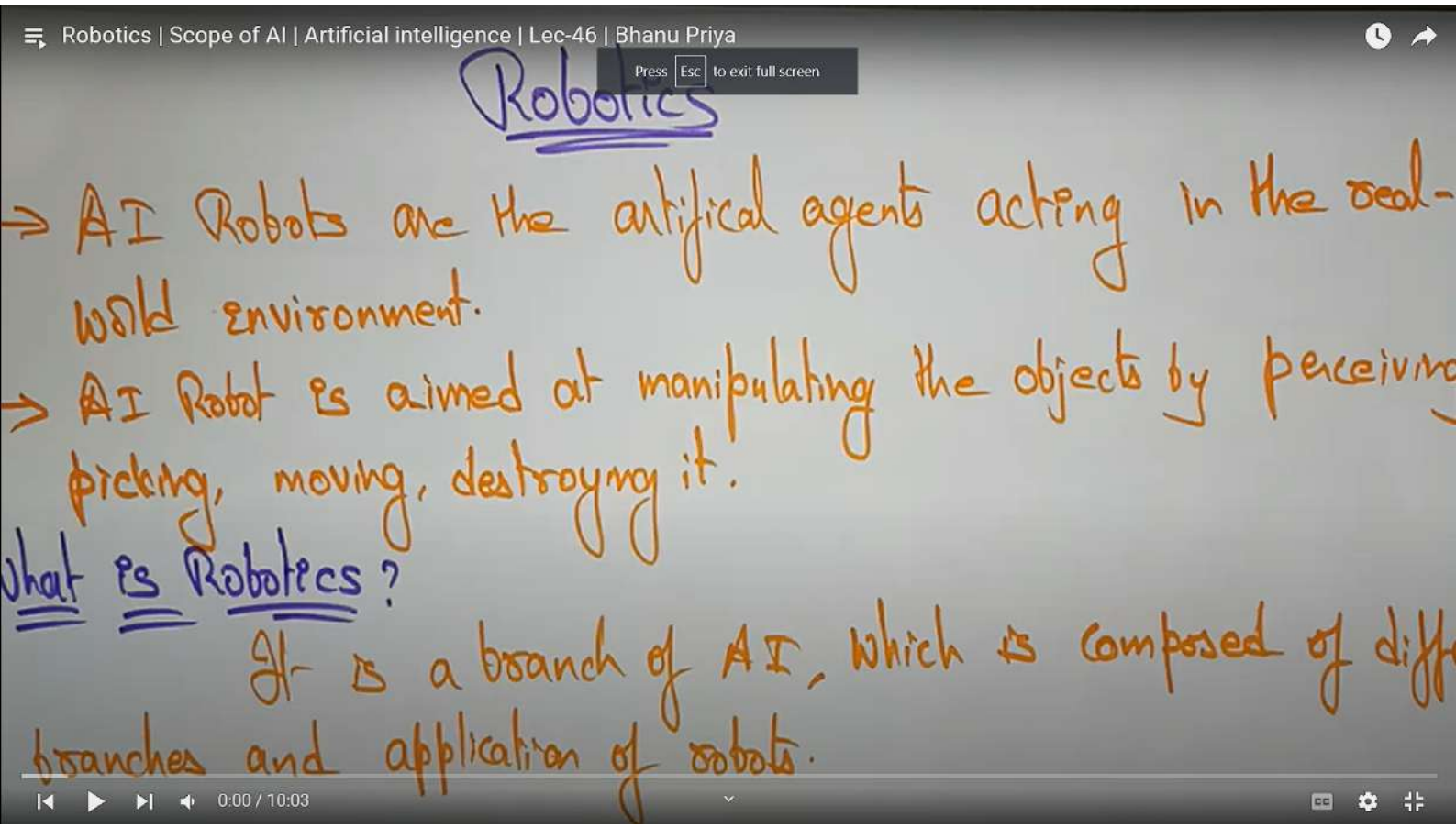

Supervised, Unsupervised and Reinforcement Learning in Artificial Intelligence in Hindi
Supervised Learning
→ Training Data
→ Both Inputs & outputs
→ Classification
→ Naive Bayes algo.
Unsupervised Learning
→ Only Inputs
I/P → Clustering
→ K-Mean
"Reinforcement Learning"
→ Reward / Penalty
→ Q-Learning
Input
Output
Learning algo.
Model
New I/P
O/P
Training Data
Actions
Agent
Environment
State
Reward
8:42 / 9:27

L83: Supervised, Unsupervised and Reinforcement Learning in Neural Network | Artificial Intelligence

Press Esc to exit full screen

Supervised Learning Algorithm	Unsupervised Learning Algorithm
i) o/p is Known for every i/p	Unknown.
ii) Labelled dataset is used for Learning.	Finds hidden Patterns or Association among data items.
iii) Predictive in Nature	Descriptive in nature
iv) Classification, Regression	Clustering, Association Algo
v) Linear Reg, NB, KNN, SVM...	K-means, Apriori
vi	

8:53 / 9:09


Robotics | Scope of AI | Artificial intelligence | Lec-46 | Bhanu Priya
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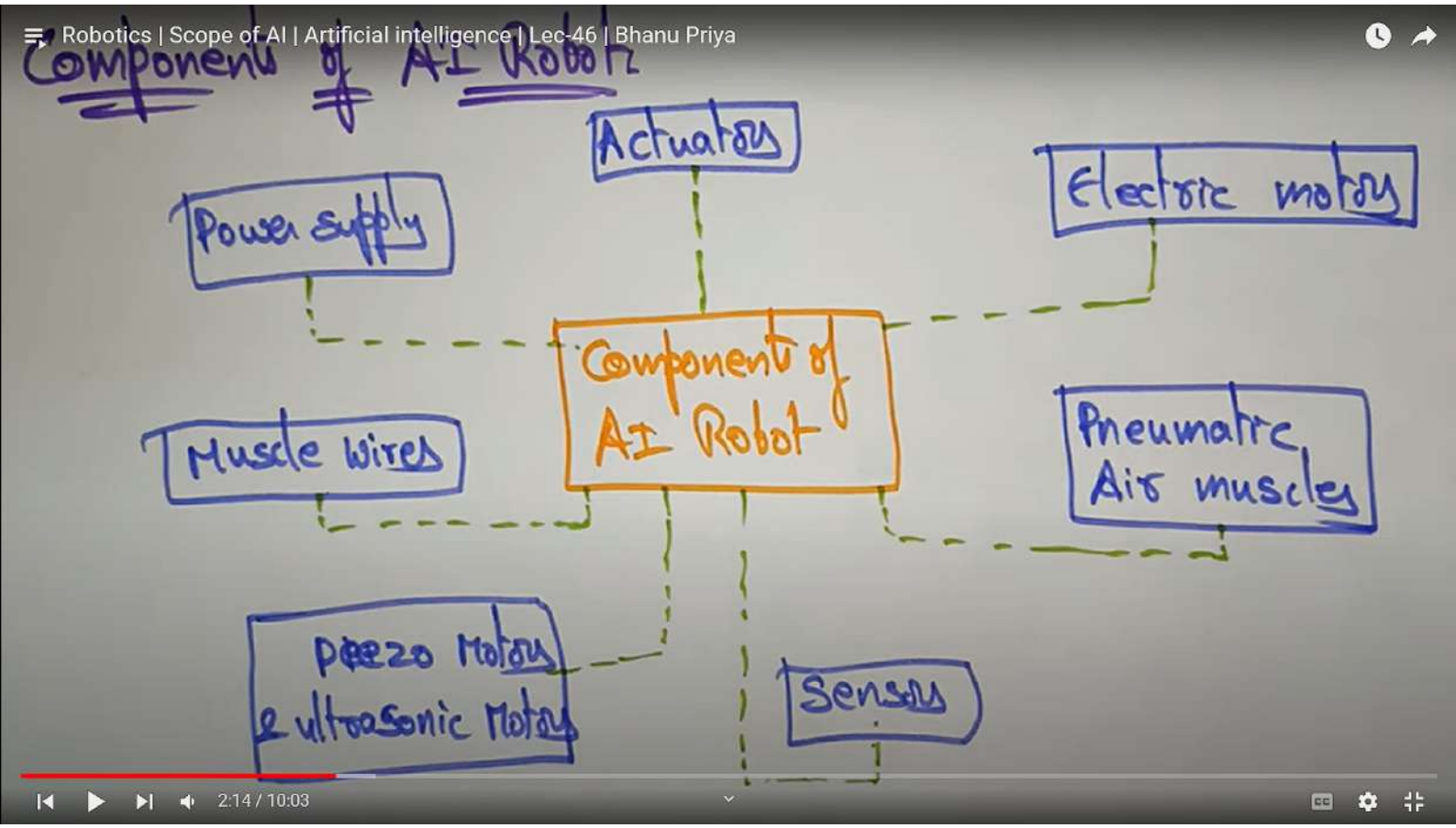
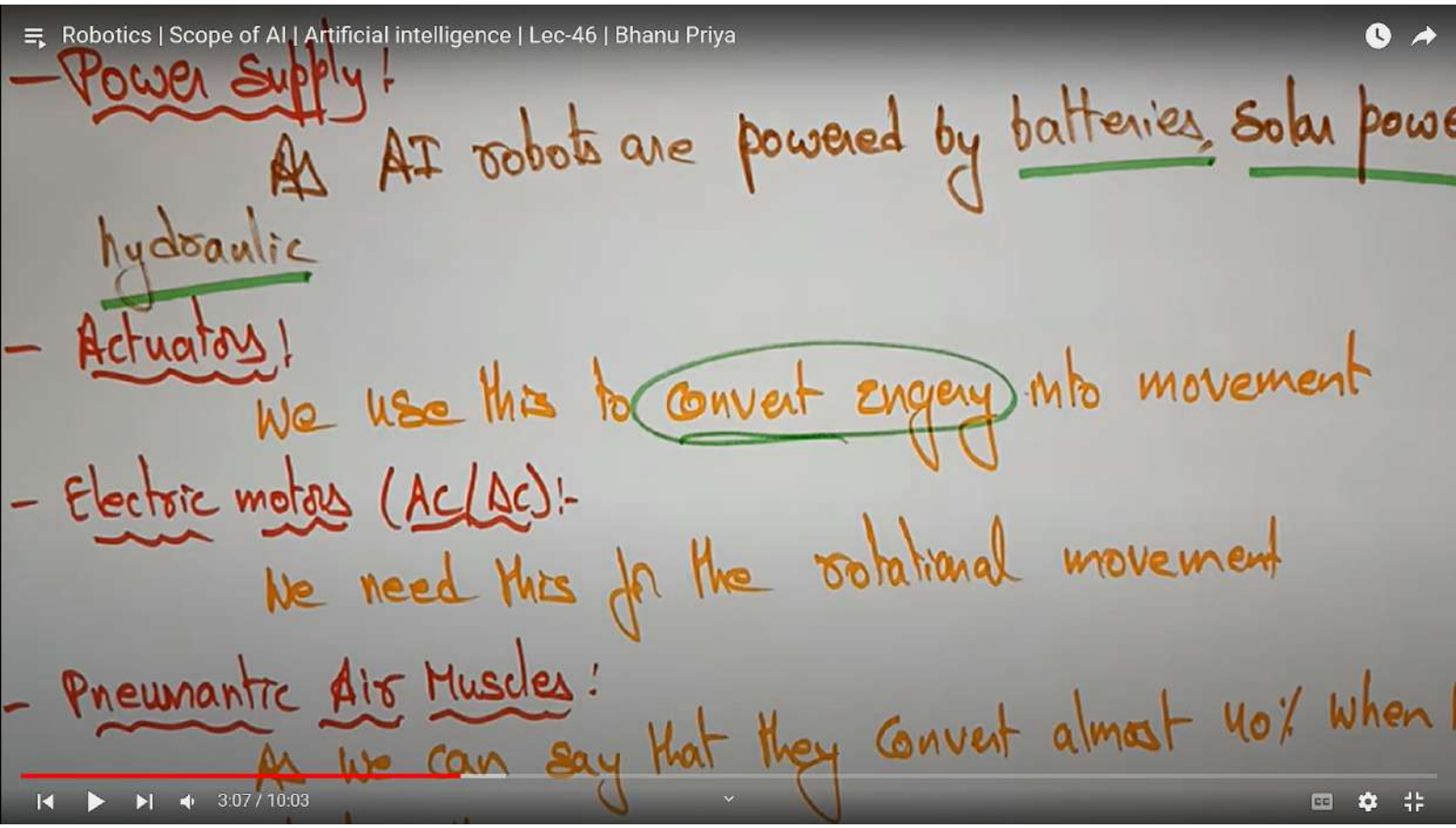
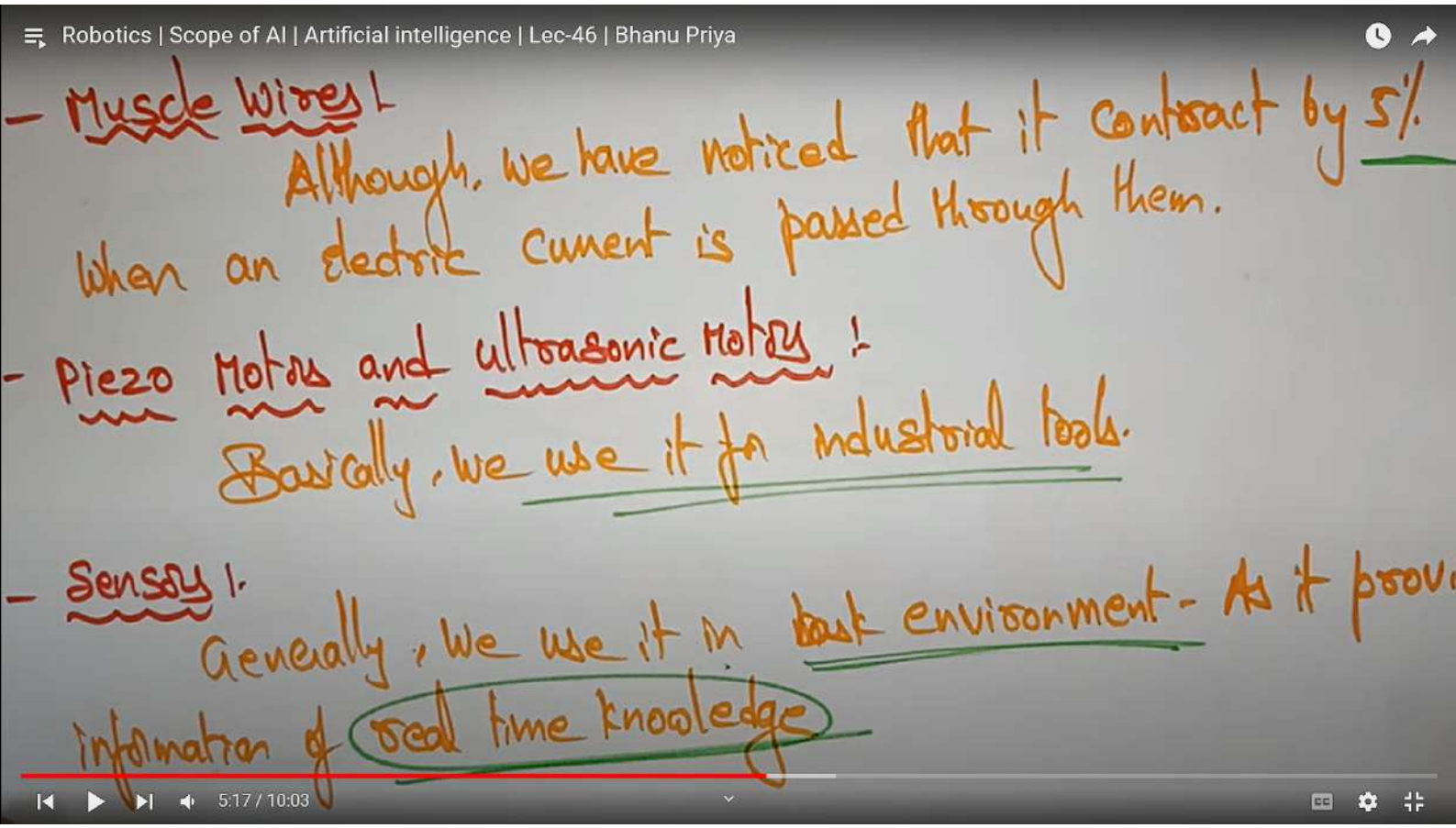
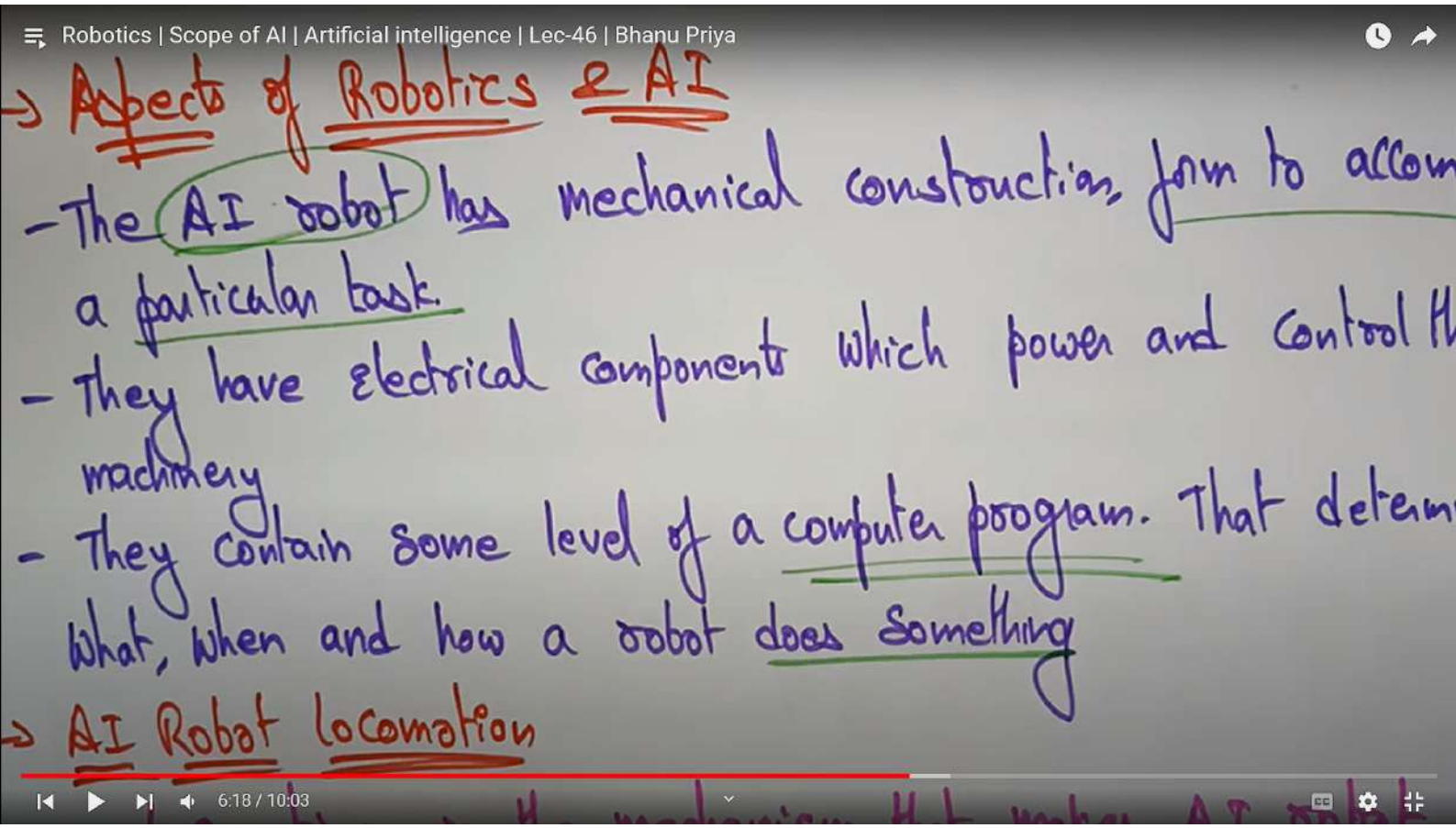
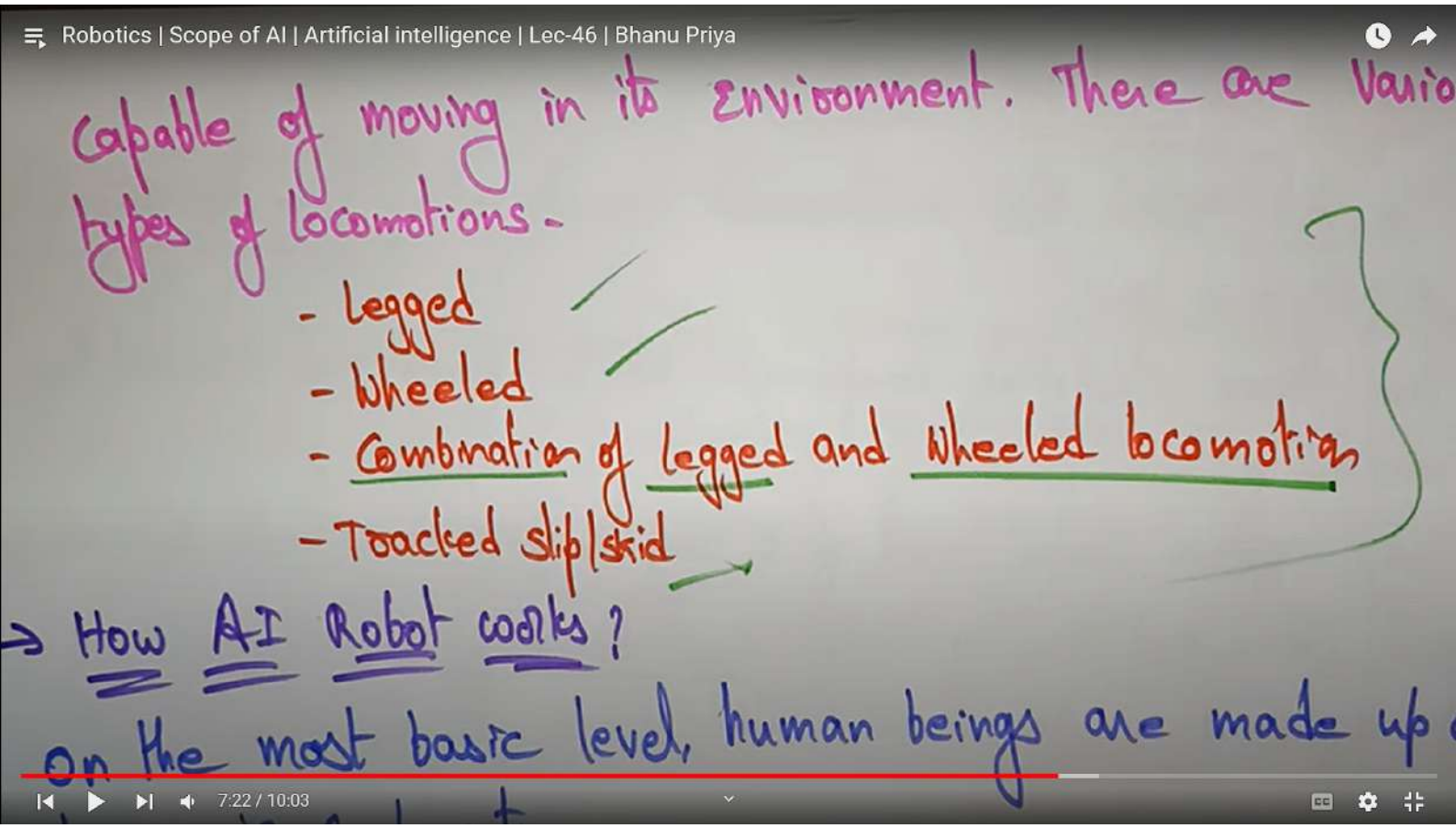
Robotics
→ AI Robots are the artifical agents acting in the real-
world environment.
→ AI Robot is aimed at manipulating the objects by perceiving
picking, moving, destroying it.
What is Robotics?
It is a branch of AI, which is composed of diff
branches and application of robots.
0:00 / 10:03


Robotics | Scope of AI | Artificial intelligence | Lec-46 | Bhanu Priya
Components of AI Robot
Actuators
Power supply
Electric motors
Components of AI Robot
Muscle wires
Pneumatic Air muscles
Piezo Motors & ultrasonic Motors
Sensors
2:14 / 10:03

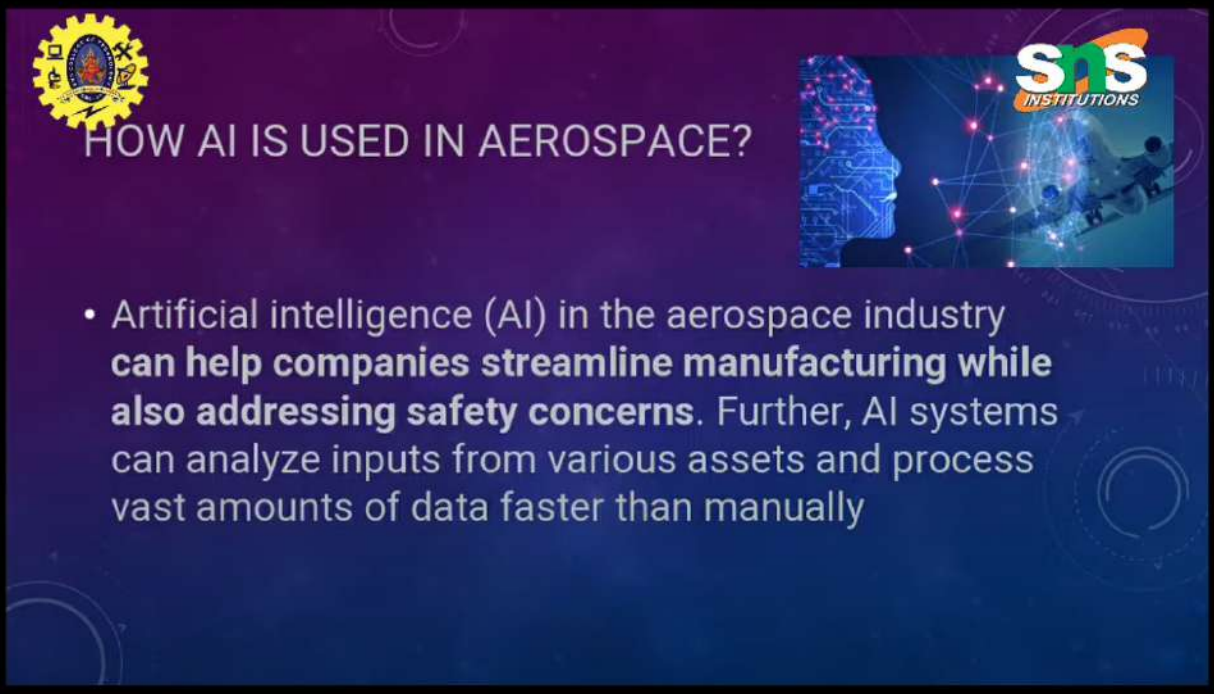

Robotics | Scope of AI | Artificial intelligence | Lec-46 | Bhanu Priya
- Power Supply!
AI robots are powered by batteries, Solu powe
hydraulic
- Actuators!
We use this to convert engery into movement
- Electric motors (AC/DC):-
We need this for the rotational movement
- Pneumantic Air Muscles!
As we can say that they convert almost 40% when
3:07 / 10:03


Robotics | Scope of AI | Artificial intelligence | Lec-46 | Bhanu Priya
- Muscle Wires :
Although, we have noticed that it contract by 5%
when an electric current is passed through them.
- Piezo Motors and ultrasonic Motors :
Basically, we use it for industrial tools.
- Sensors :
Generally, we use it in task environment - As it provi
information of real time knowledge
5:17 / 10:03


Robotics | Scope of AI | Artificial intelligence | Lec-46 | Bhanu Priya
→ Aspects of Robotics & AI
- The AI robot has mechanical construction, form to accom
a particular task.
- They have electrical components which power and control th
machinery
- They contain some level of a computer program. That determ
what, when and how a robot does something
→ AI Robot locomation
6:18 / 10:03


Robotics | Scope of AI | Artificial intelligence | Lec-46 | Bhanu Priya
Capable of moving in its Environment. There are Vario
types of locomotions -
- Legged
- Wheeled
- Combination of legged and Wheeled locomotion
- Tracked slip/skid
→ How AI Robot works ?
On the most basic level, human beings are made up
7:22 / 10:03

Application of AI in aerospace Industry

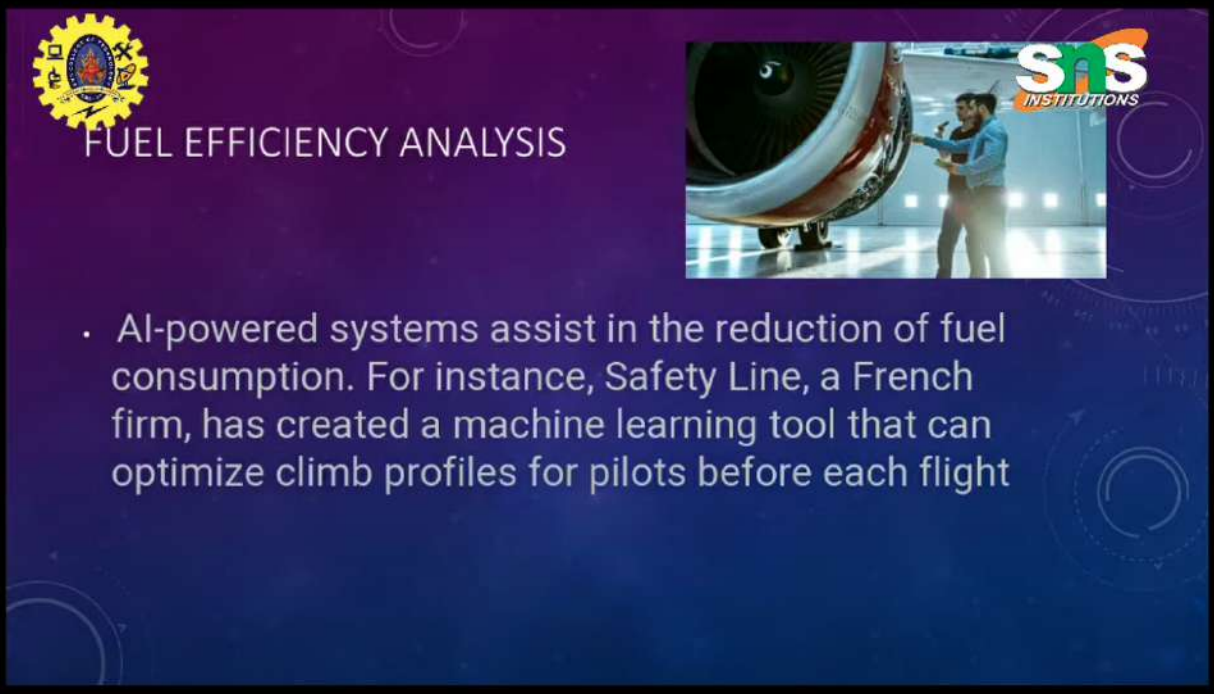


0:39 / 1:38

Application of AI in aerospace Industry

0:52 / 1:38

Application of AI in aerospace Industry



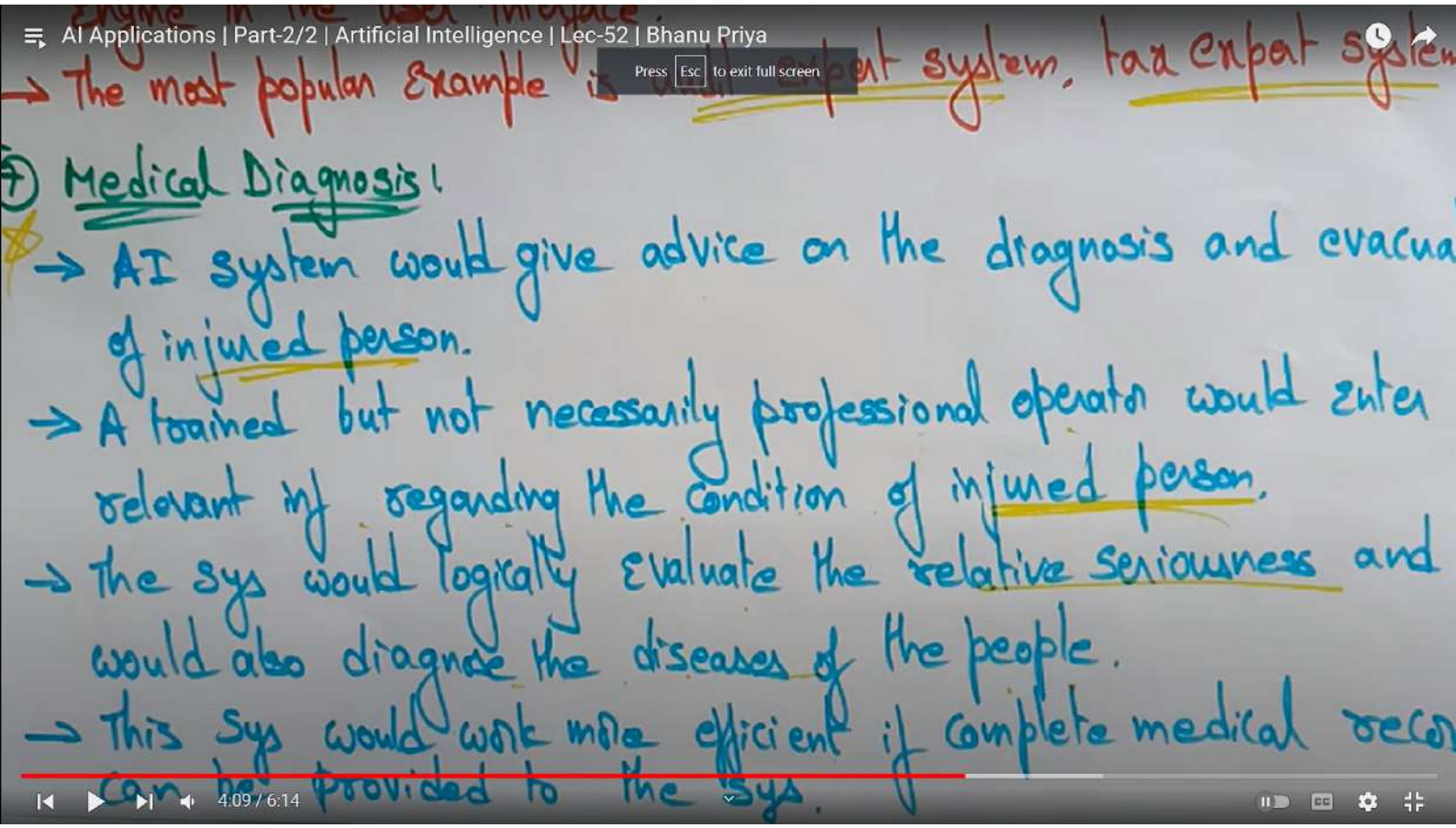
0:59 / 1:38

Application of AI in aerospace Industry

DATA ANALYSIS

- The aerospace industry is expanding its use of data to understand and improve its current technologies. It uses **analytics to enable suppliers to behave more efficiently and connect Original Equipment Manufacturers (OEMs)** to further optimize the supply chain in the market

1:19 / 1:38


AI Applications | Part-2/2 | Artificial Intelligence | Lec-52 | Bhanu Priya
Press Esc to exit full screen
→ The most popular example is ... expert system, tax expat system.
⑦ Medical Diagnosis:
→ AI system would give advice on the diagnosis and evacua
of injured person.
→ A trained but not necessarily professional operator would enter
relevant inf regarding the condition of injured person.
→ the sys would logically evaluate the relative seriousness and
would also diagnose the diseases of the people.
→ This sys would work more efficient if complete medical reco
can be provided to the sys.
4:09 / 6:14

Inductive learning | Artificial intelligence | Lec-48 | Bhanu Priya

→ The task of pure inductive inference (or induction) is :-
give a collection of examples, return a function h that approximates. The function h is called a hypothesis.

Measuring the performance of the learning algorithm

① Collect a large set of examples
② Divide it into two disjoint sets :- the training set & the test set
③ use the learning alg with the training set as examples to generate hypothesis H.

2:13 / 7:02

Inductive learning | Artificial intelligence | Lec-48 | Bhanu Priya

are correctly classified by H.

5) Repeat steps 1 to 4 for different sizes of training sets and different randomly selected training sets of each size.

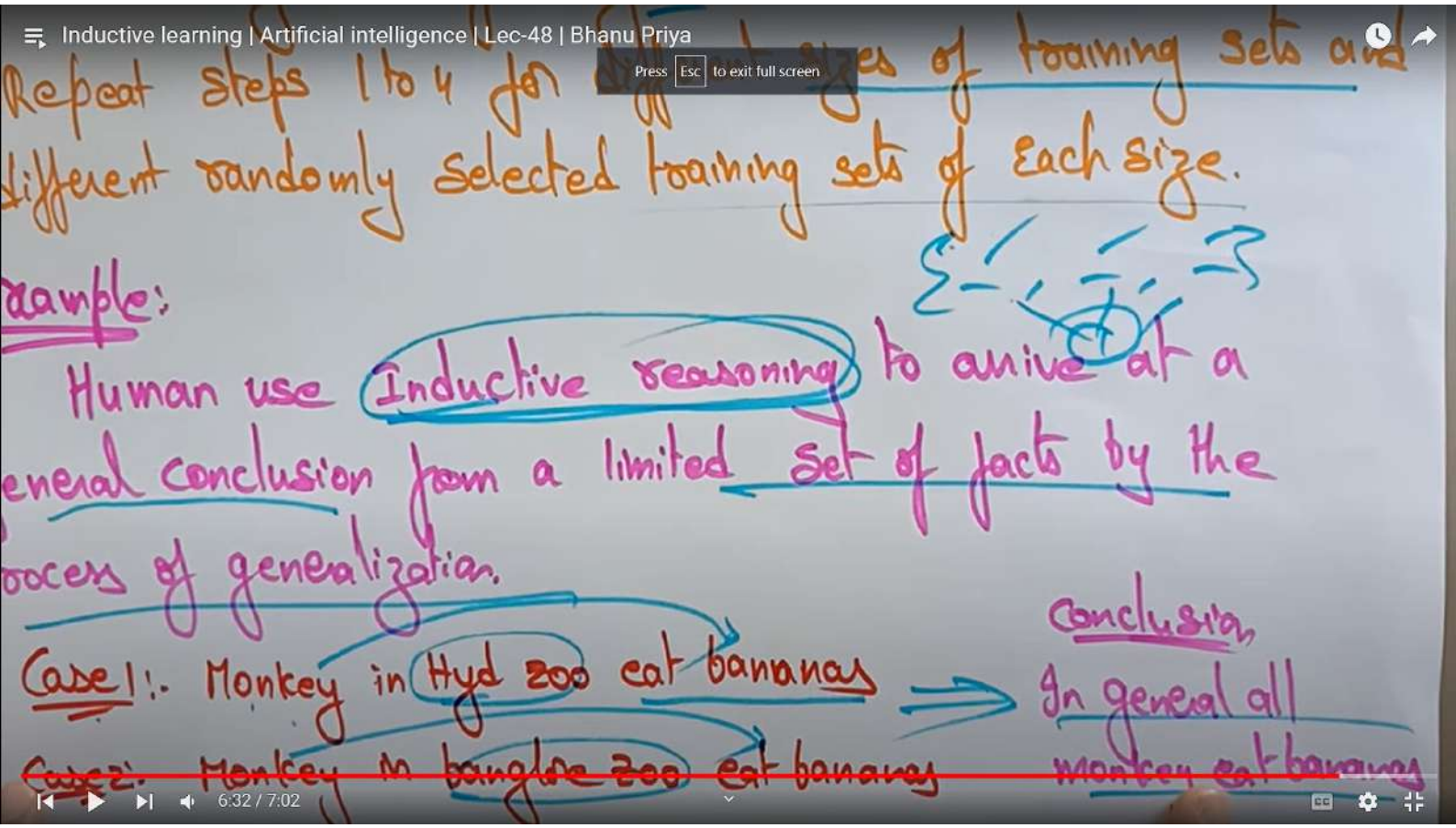
Example:

Human use Inductive reasoning to arrive at a general conclusion from a limited set of facts by the process of generalization.

Case 1:- Monkey in Hyd zoo eat bananas

Conclusion:
In general all

4:34 / 7:02


Inductive learning | Artificial intelligence | Lec-48 | Bhanu Priya
Press Esc to exit full screen
Repeat steps 1 to 4 for ... of training sets and
different randomly selected training sets of each size.
xample:
Human use Inductive reasoning to arrive at a
eneral conclusion from a limited set of facts by the
ocess of generalization.
Case 1:. Monkey in Hyd zoo eat bananas
Case 2: Monkey in banglore zoo eat bananas
Conclusion
In general all
monkey eat bananas
6:32 / 7:02