

8:18

D1 What is Deep Learning HOME INSERT DRAW VIEW

Deep Learning is a subfield of Artificial Intelligence and Machine Learning that is inspired by the structure of a human brain. Deep learning algorithms attempt to draw similar conclusions as humans would by continually analyzing data with a given logical structure called Neural Network.

The diagram on the left shows three nested ovals: 'Artificial Intelligence' (outermost, yellow), 'Machine Learning' (middle, pink), and 'Deep Learning' (innermost, blue). Red arrows point from the text to these ovals.

The diagram on the right is a detailed ANN structure. It consists of an 'input layer' with 4 yellow nodes, 'hidden layer 1' with 4 blue nodes, 'hidden layer 2' with 4 green nodes, and an 'output layer' with 1 red node. Red boxes group the nodes in each layer. Red arrows indicate the flow of data from input to output. Handwritten red notes include 'data input | output' at the top, 'statistical perception' near the hidden layers, 'ANN' near the output layer, and 'deep' at the bottom. A red arrow labeled 'Weights' points to the connections between the input layer and hidden layer 1.

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D1 What is Deep Learning HOME INSERT DRAW VIEW

Deep learning is part of a broader family of machine learning methods based on artificial neural networks with representation learning.

Deep Learning Algorithms uses multiple layers to progressively extract higher-level features from the raw input. For example, in image processing, lower layers may identify edges, while higher layers may identify the concepts relevant to a human such as digits or letters or faces.

The diagram on the left shows a neural network with 3 input nodes (yellow), 4 hidden nodes (blue), 3 hidden nodes (green), and 1 output node (red). Red arrows point from the text to the diagram.

Handwritten notes on the right include 'feature extraction engineering' and 'features' at the top. Below this, a tree diagram shows 'Deep learning' leading to 'dog / cat classifier', which then branches into 'dog' and 'cat'. Further down, a circle labeled 'ML' leads to 'features', which branches into 'size' and 'color'.

11:10

D1 What is Deep Learning HOME INSERT DRAW VIEW

Deep Learning VS Machine Learning

16 February 2022 06:33

1. Data Dependency
2. Hardware Dependency
3. Training Time
4. Feature Selection
5. Interpretability

costly DL

Data ↑ hungry

Data ↑ performance ↑

run slow

matrix multiplication

powerful

Representation learning

features extract

complex

training time - high → weeks

ML → low minutes - hrs

less data

ML wins

Prediction

DL → fast

ML

KNN

3:23

D1 What is Deep Learning HOME INSERT DRAW VIEW

Why now?

Wednesday, February 16, 2022 6:59 AM

1960's → Alan Turing

→ 2012

Data hungry

ML → 100 rows / 1000 rows

Deep learning

2010

Smart phone

Internet pricing → 2015

Free

Hardware

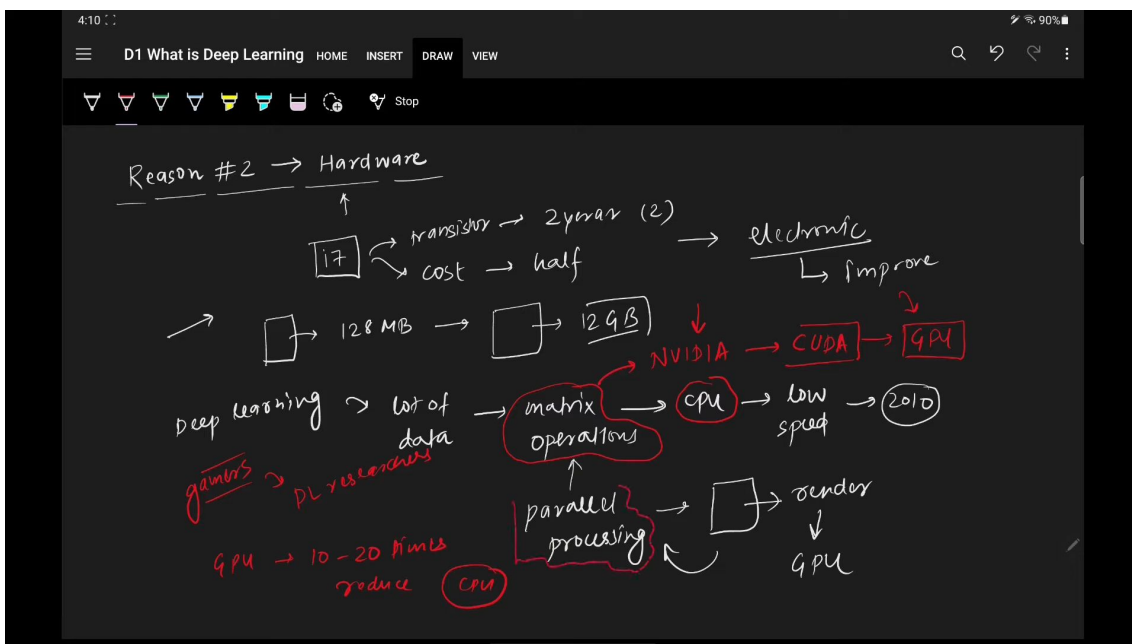
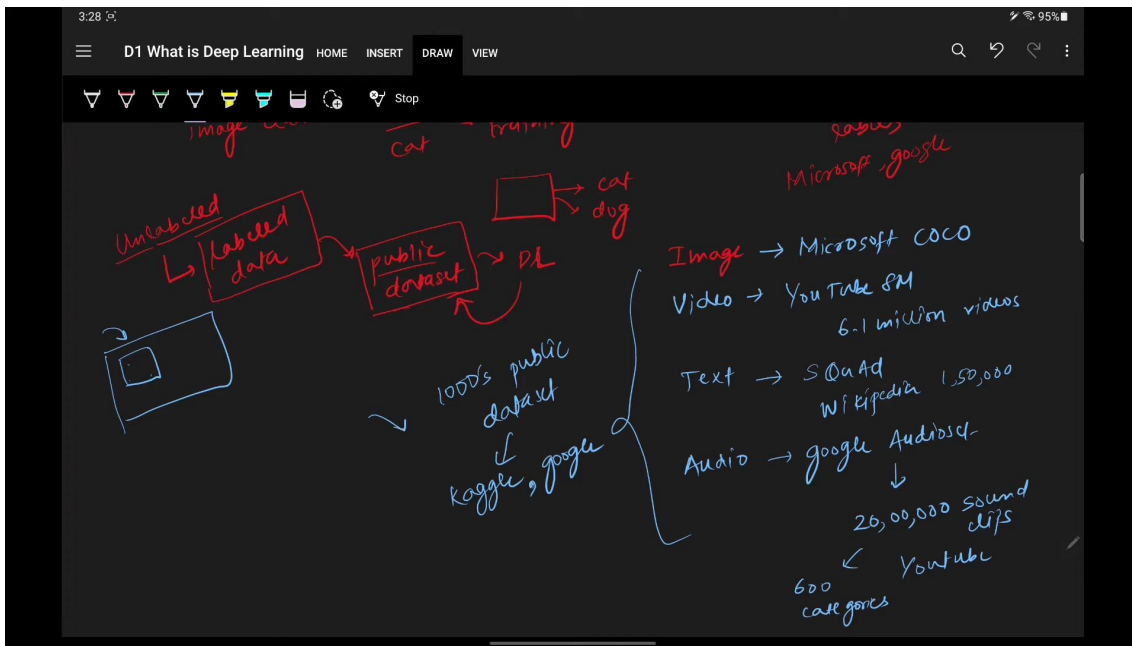
Datasets

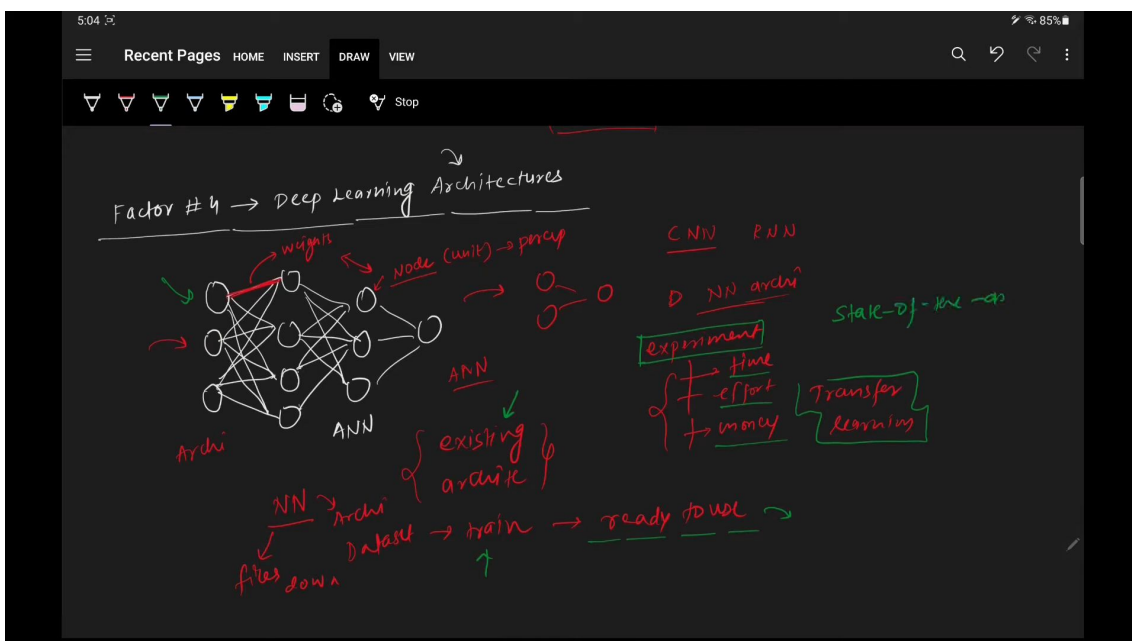
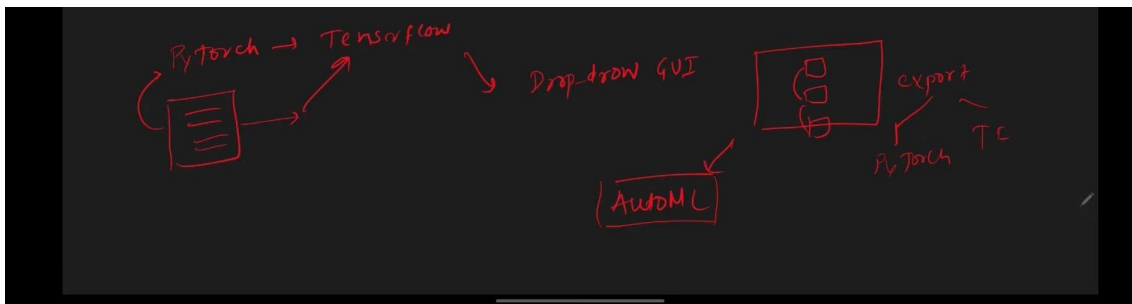
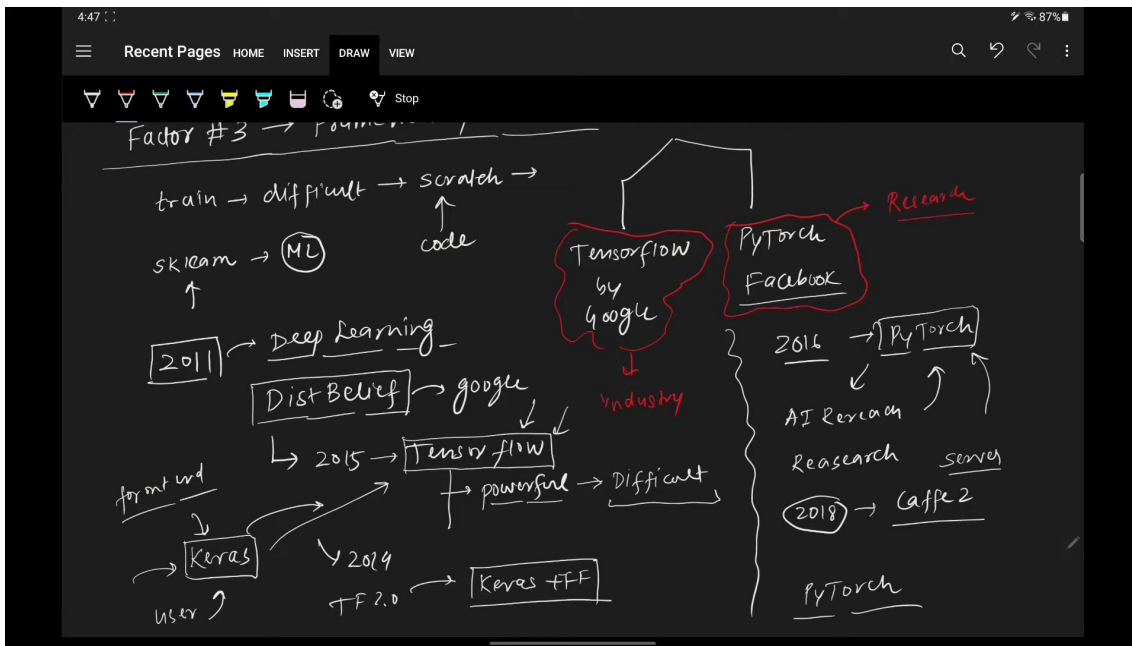
Frameworks

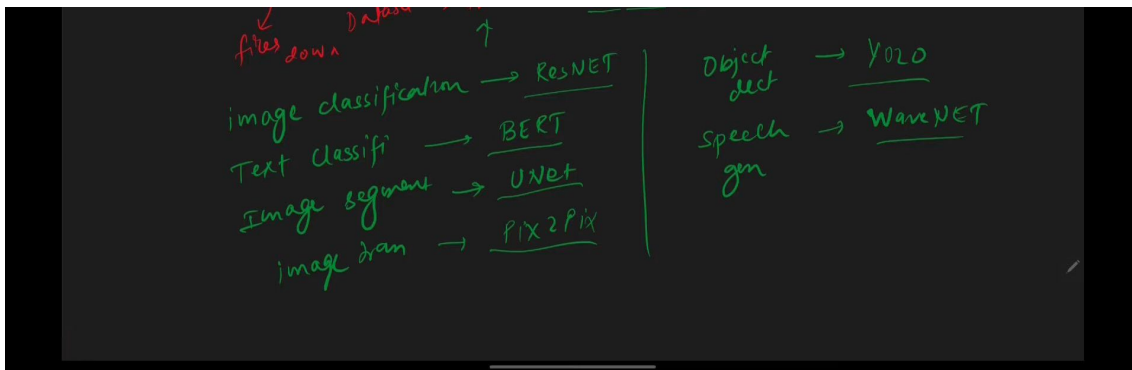
Community

Why now

Architecture







TYPES OF NEURAL NETWORK

1. MLP - Multi Layer Perceptron
2. CNN - Convolution Neural Network
3. RNN - Recurrent Neural Network - LSTM
4. Auto Encoders
5. GAN - Generative Adversarial Networks