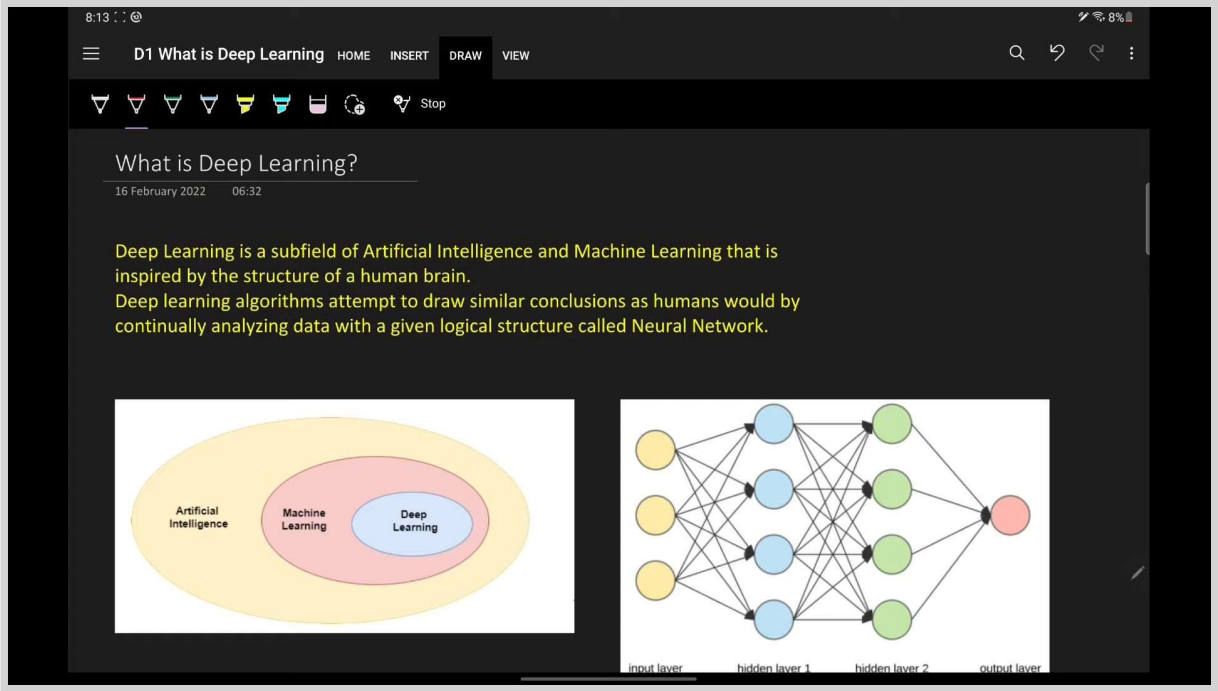
←

02:35



Deep Learning is a subfield of Artificial Intelligence and Machine Learning that is inspired by the structure of a human brain.

Machine Learning is subfield of Artificial Intelligence, focus on stastical data.

Deep Learning : It is subfield of Machine learning, that is inspired by human brain.
Logical unit is perceptron.
1)Perceptron
2)Layer
a)Input Layer
b)Hidden Layer
c)Output Layer

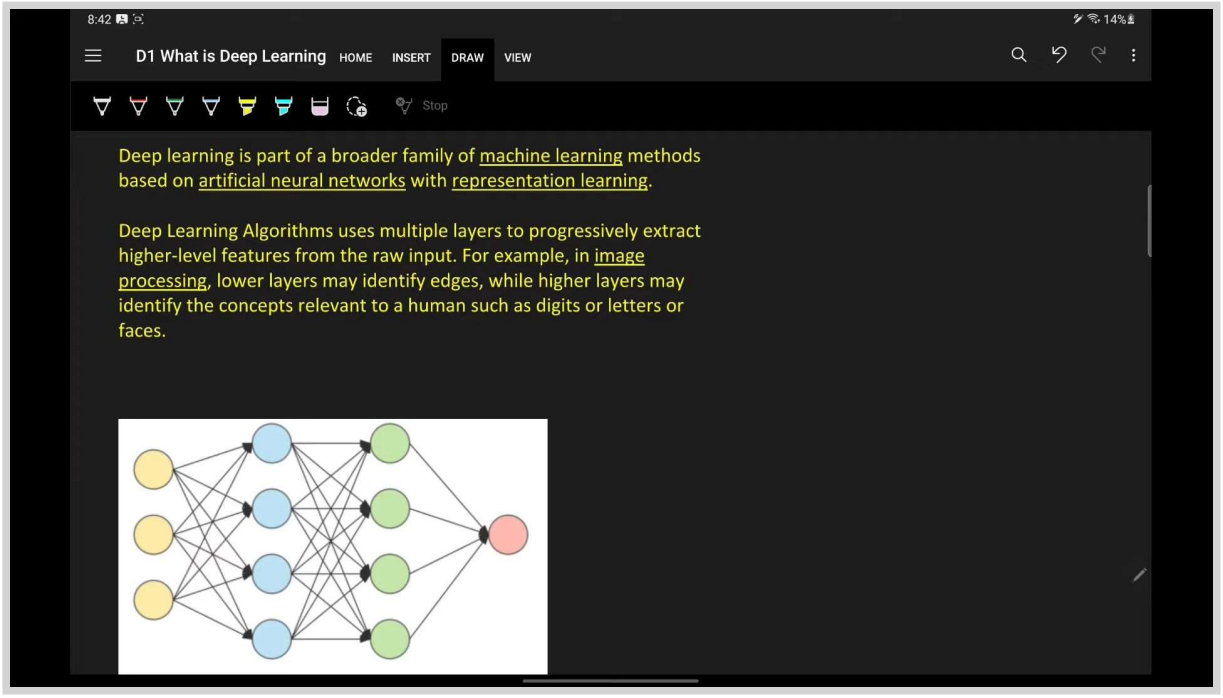
3)Weight

There are different type of Neural Network
a)ANN
b)CNN- Image
c)RNN -speech
d)GAN - generate text

=>Deep learning follow logical structure instead of a stastical structure

Why is deep Learning get famous?
=>Applicability - It is applicable in large domain
=>Performance - high-performance state-of-the-art GO game Alphago AI win 4 matches out of 5

13:26

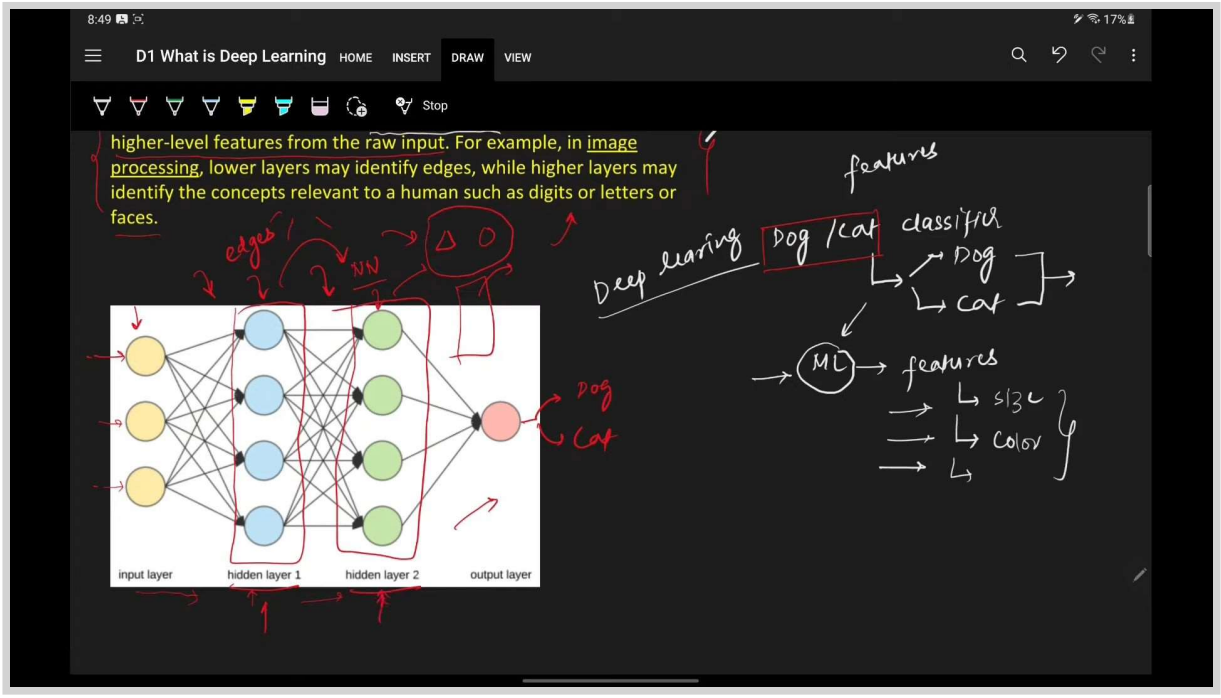


Deep learning is part or a broader faily of machine learning methods based on artificial neural networks with representation learning.

Representation Learning- feature learing or representation learning, no need manually do feature extraction, feature engineering.

=>The intial layer extract edges, higher layers may identify the complex concept.

19:43

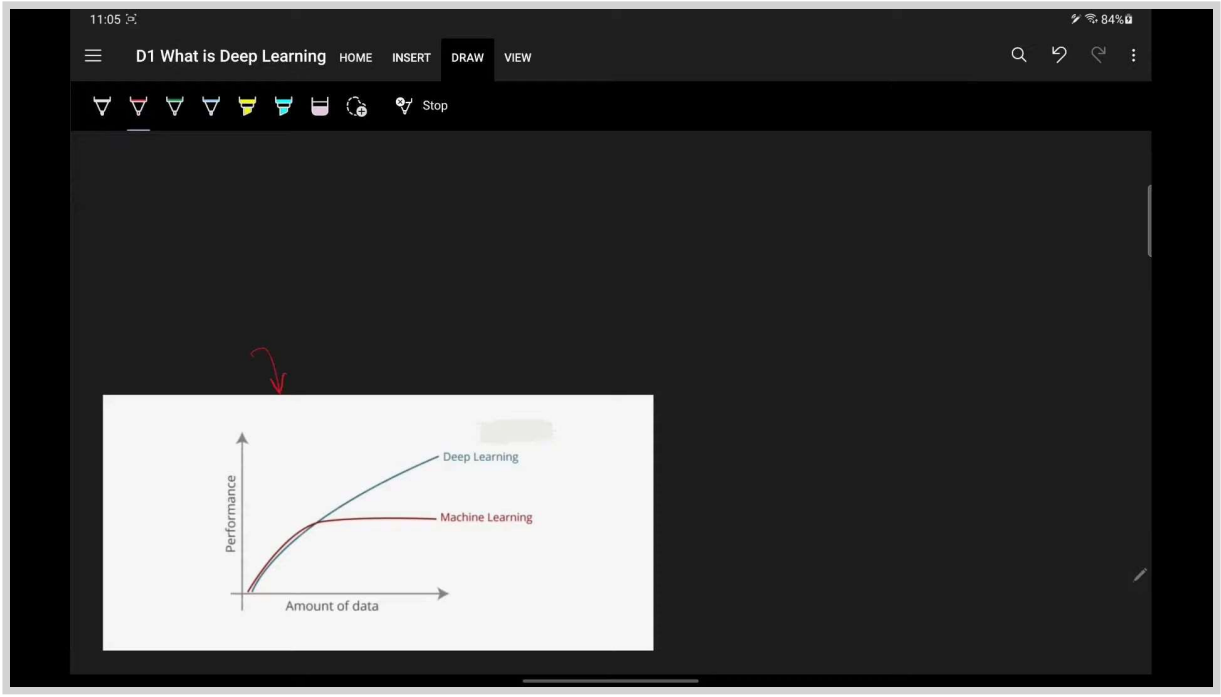


Deep Learning VS Machine Learning

1.Data Dependency -

Need more data in comparison to ML.

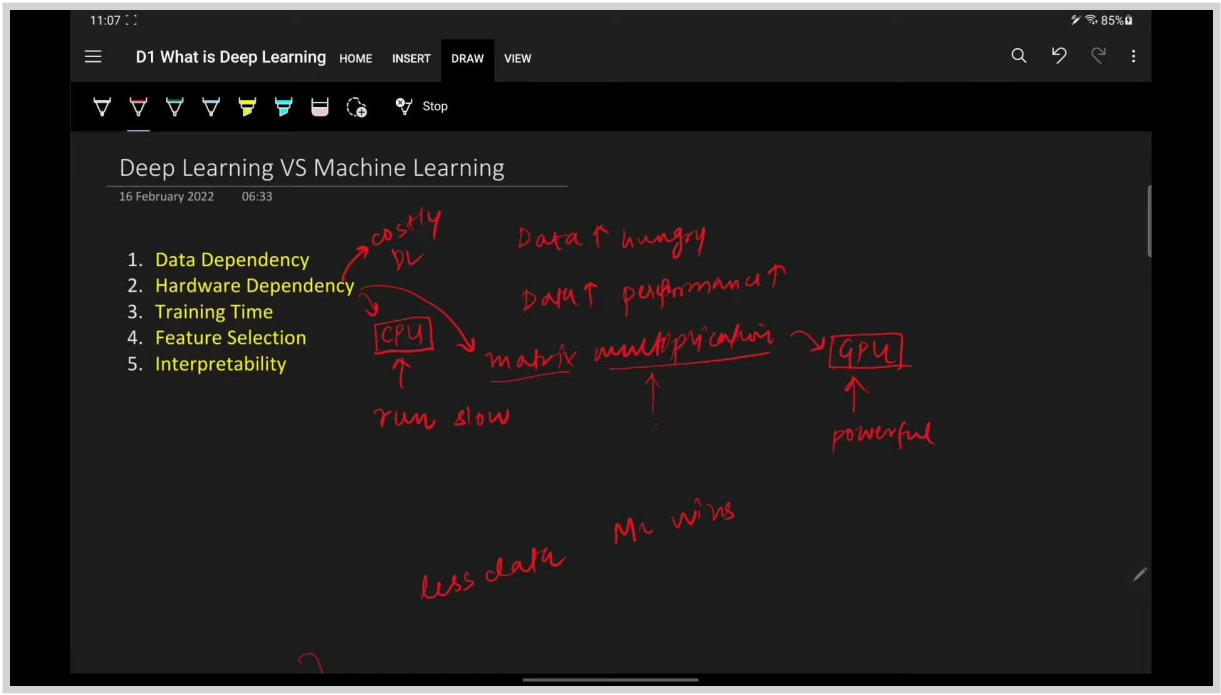
21:31



=>for less data ML win, after adding more data no effect on ML but increase perfomance of DL.

2.Hardware Dependency- for handling you need GPU, with more memory .

[23:58]



3.Training Time-

=>high training time it can take month and year.

=>Prediction Time very fast but varies in ML

4.Feature Selection- automatically extract relevant feature from data.

Using ML-

Placement Prediction-

1)12th marks

2)10th Marks

3)No of Achivement

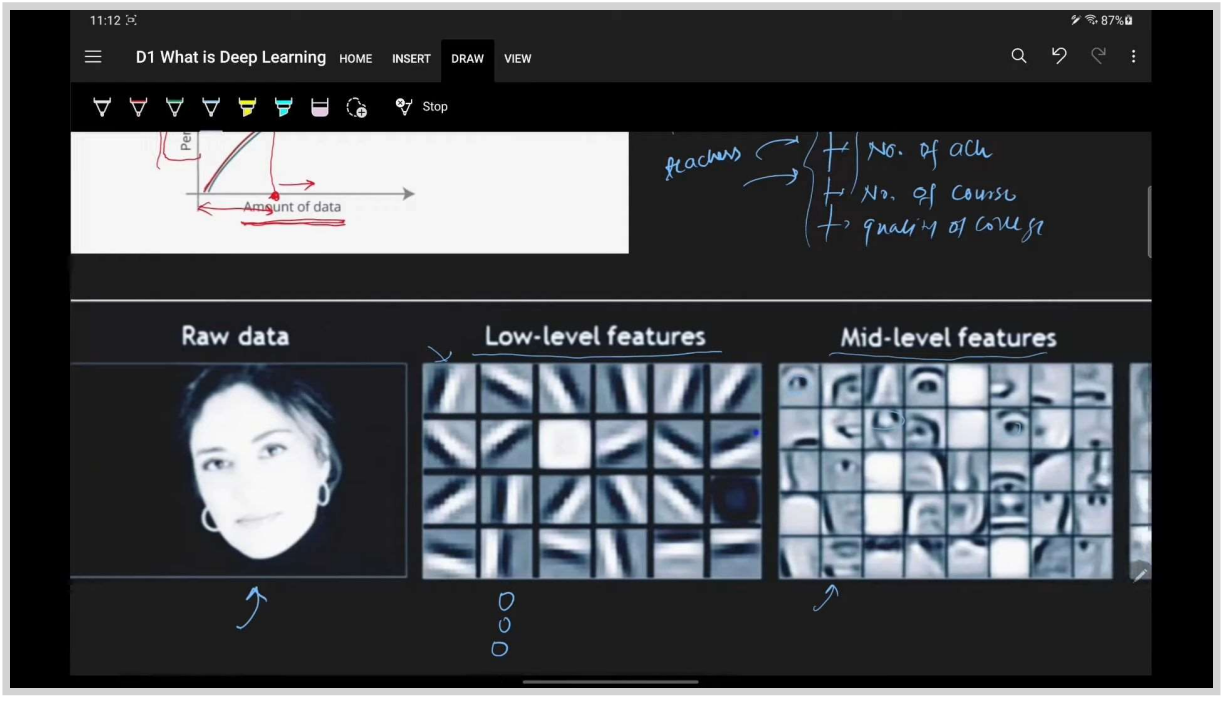
4)No of Course

5)Quality of course

Using DL-

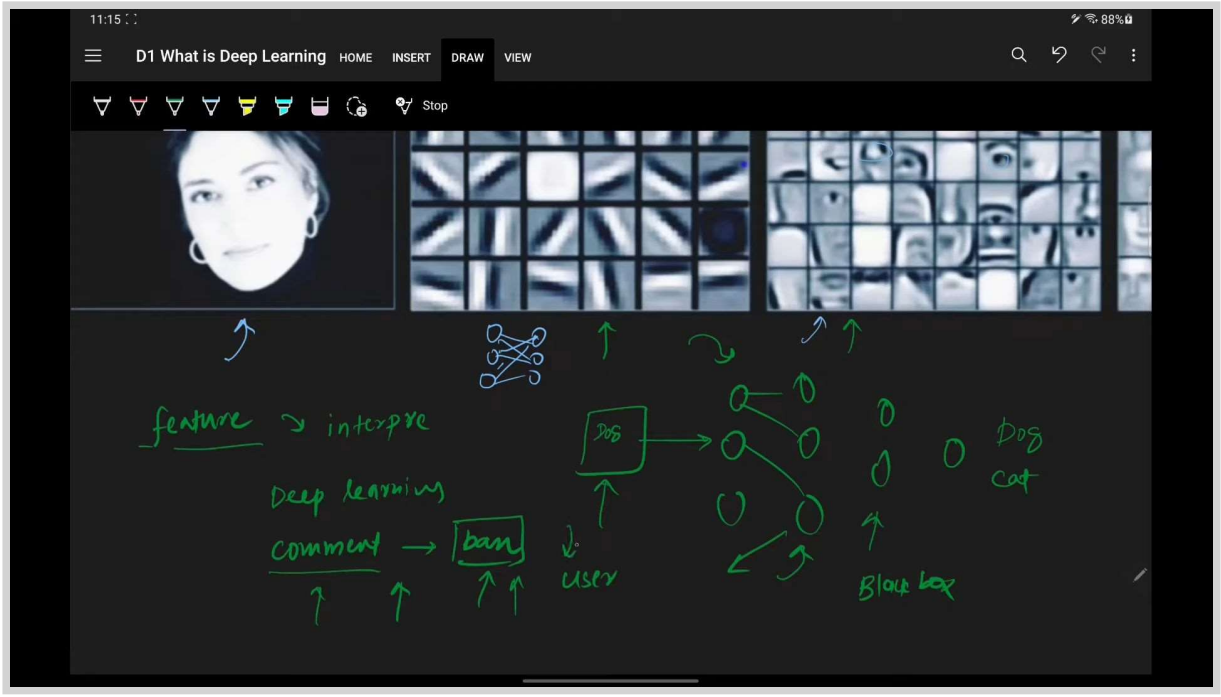
Does not need feature manually

28:41



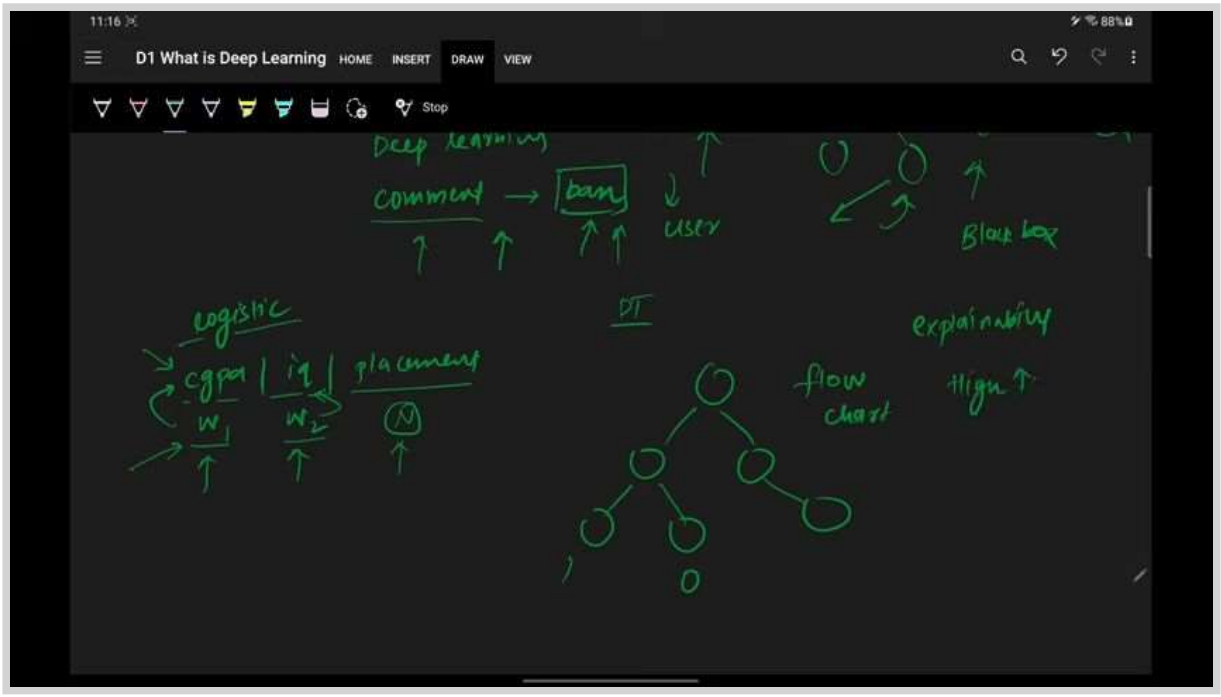
5. Interpretability- features are extracted automatically. You cannot interpret. It happen like a black box.

31:05



In Machine learning has high interpretability.

[32:40]



Deep Learning Cannot replace Deep Learning

Why Deep Learing get Famous?

Alan Turing-> 1960's

why after 2012 get famous more?

1)Datasets

2)Frameworks

3)Architecture

4)Hardware

5)Community

1)Datasets-

It is data hungry,

ML can work good with less data also

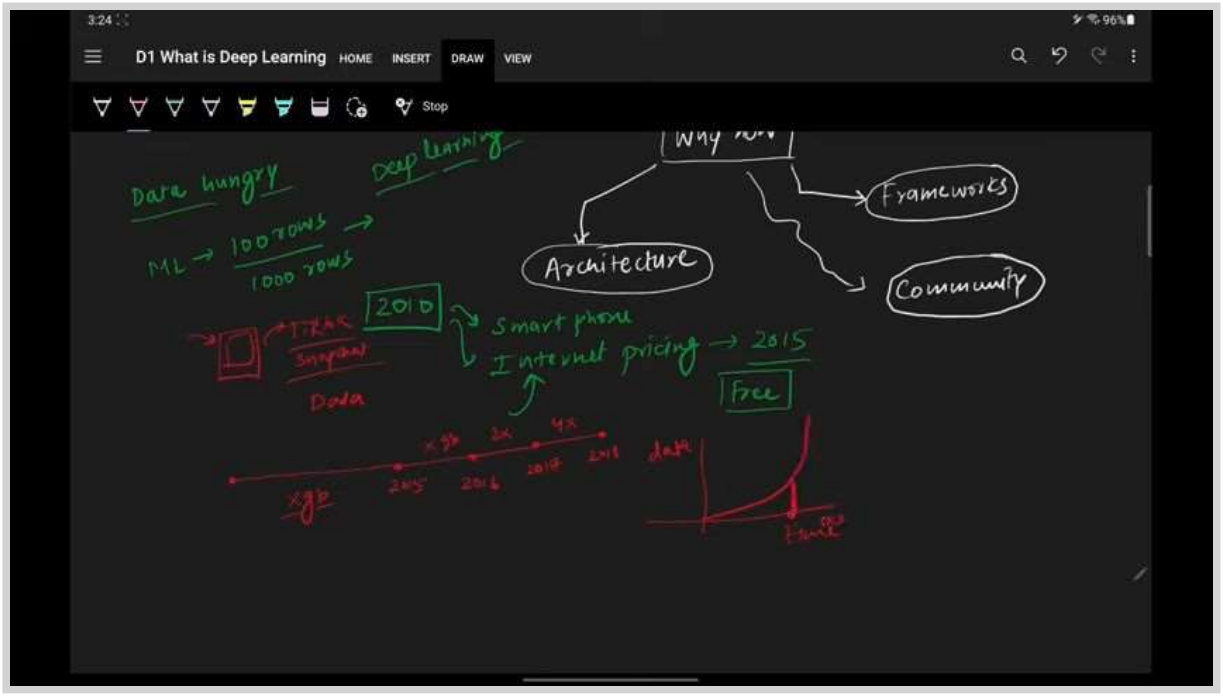
after 2010

=>we get smart phone

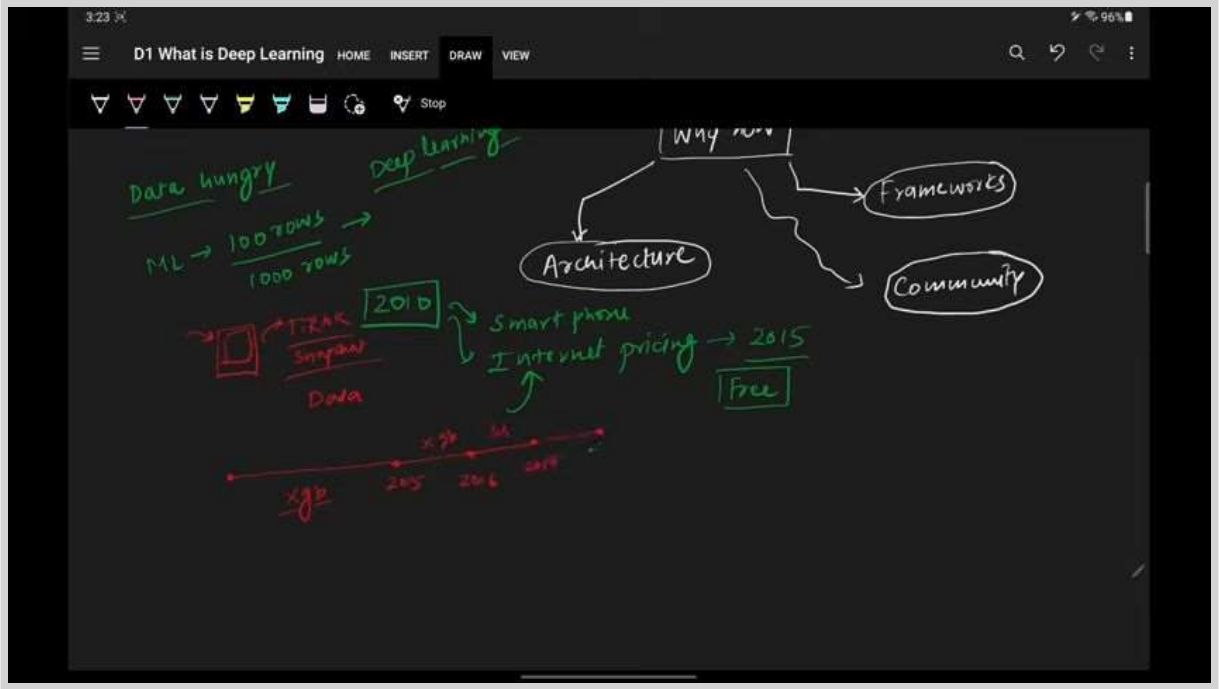
=>Internet pricing low-> 2015

therefore we can generate high data.

[39:25]



[39:09]



41:08

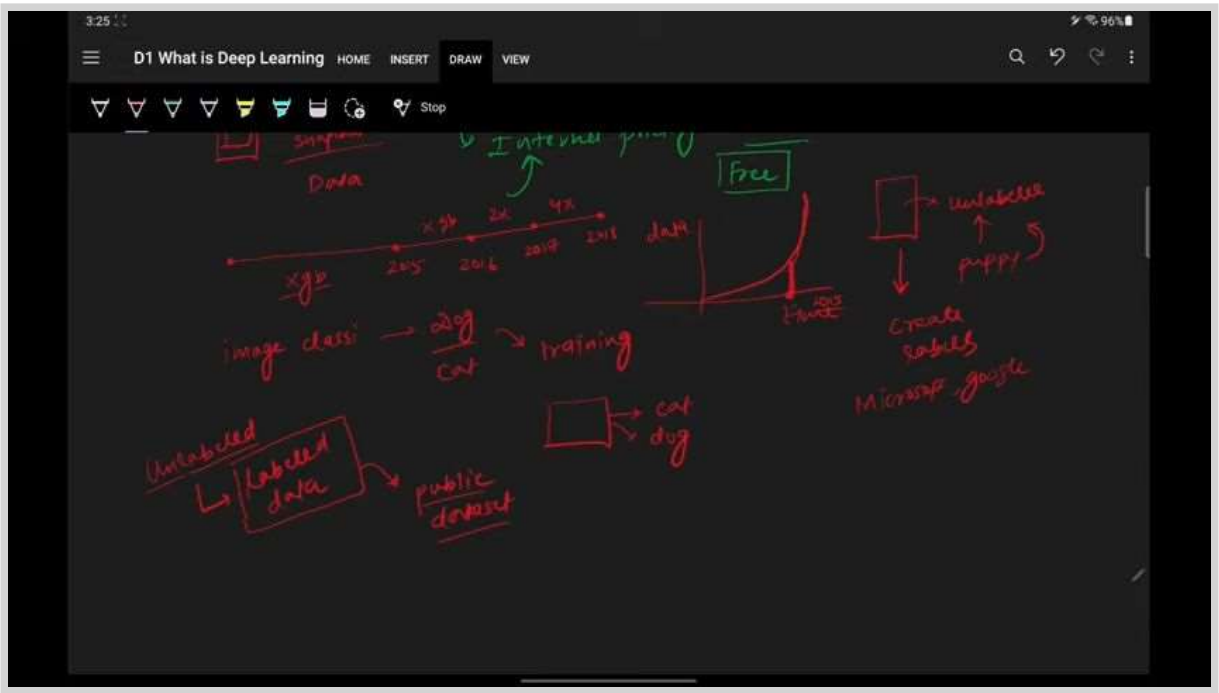


Image data- Microsoft Coco
use for image detection
video -Youtuve 8M 6.1 million videos
Text - SQuAd

Audio- google Audioset 20lakh extract from youtube

Hardware-
Moore's Law : No of transistors double the transistor in every two and electronic cost decreases and performance increases.
Lot of data -> Matrix operations -> cpu ->low speed -> 2010

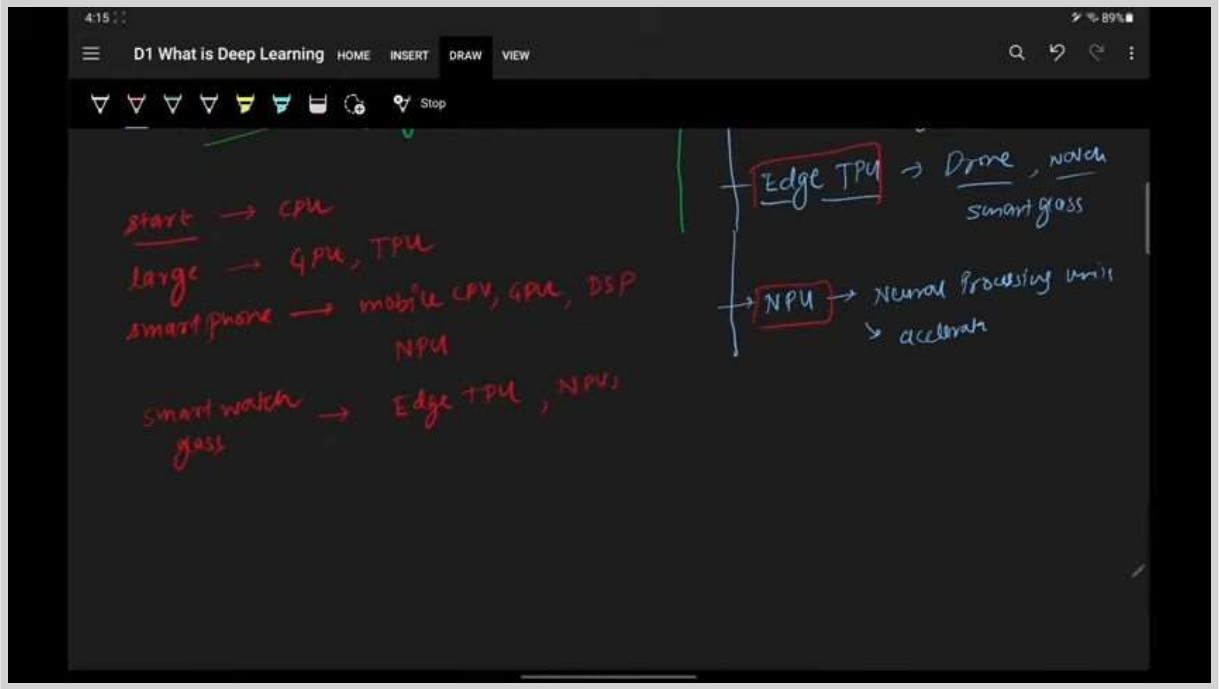
parallel processing ->We can use GPU
so we can use GPU for Deep Learning
NVIDIA can use to make GPU .

FPGA-Field Programmable- low power cusomiable , expensive
Bing uses FPGA

ASIC-TPU ->Tensoe Processing unit(made by google) especislly in google collab
Edge TPU -> Drone, smart glass

NPU- Neural Processing Unit

52:24



FrameWorks/Libraries

train-> difficult->scratch

TensorFlow by google

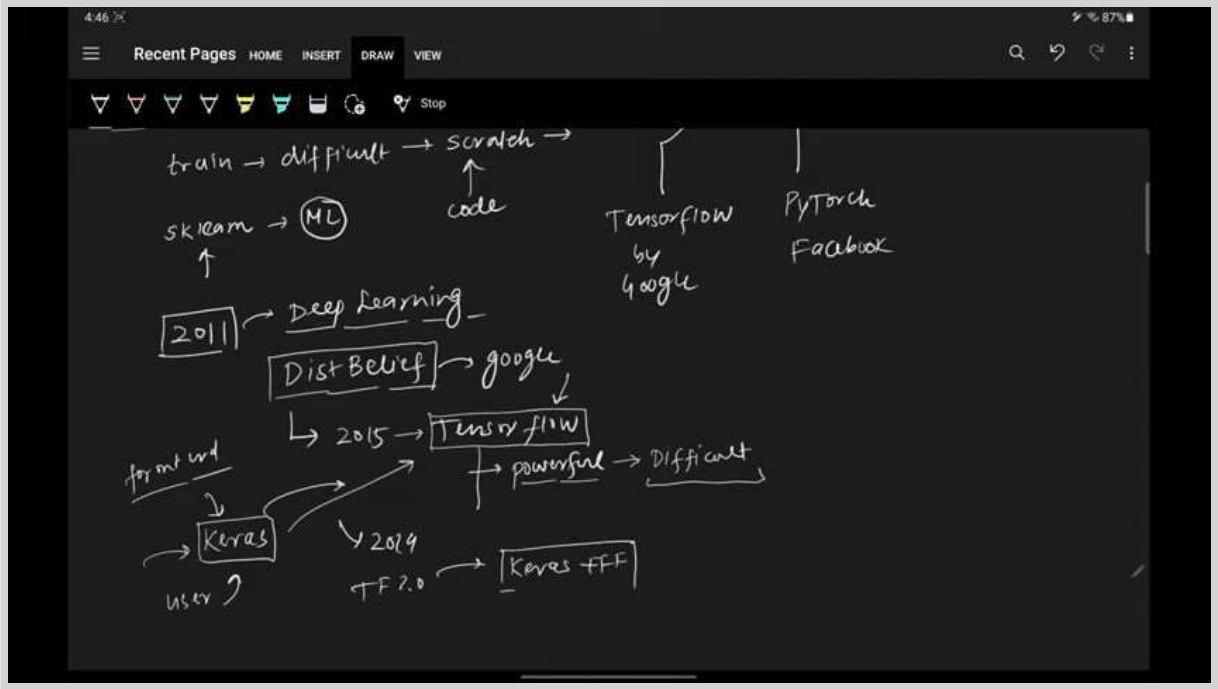
PyTorch by Facebook

DistBelief by google

TensorFlow was easy to use

Keras library made on top of TensorFlow

[56:01]


Recent Pages HOME INSERT DRAW VIEW
Stop
train → difficult → scratch →
code
sklearn → ML
Tensorflow by Google
PyTorch Facebook
2011 → Deep Learning
Dist Belief → google
2015 → Tensorflow
powerful → Difficult
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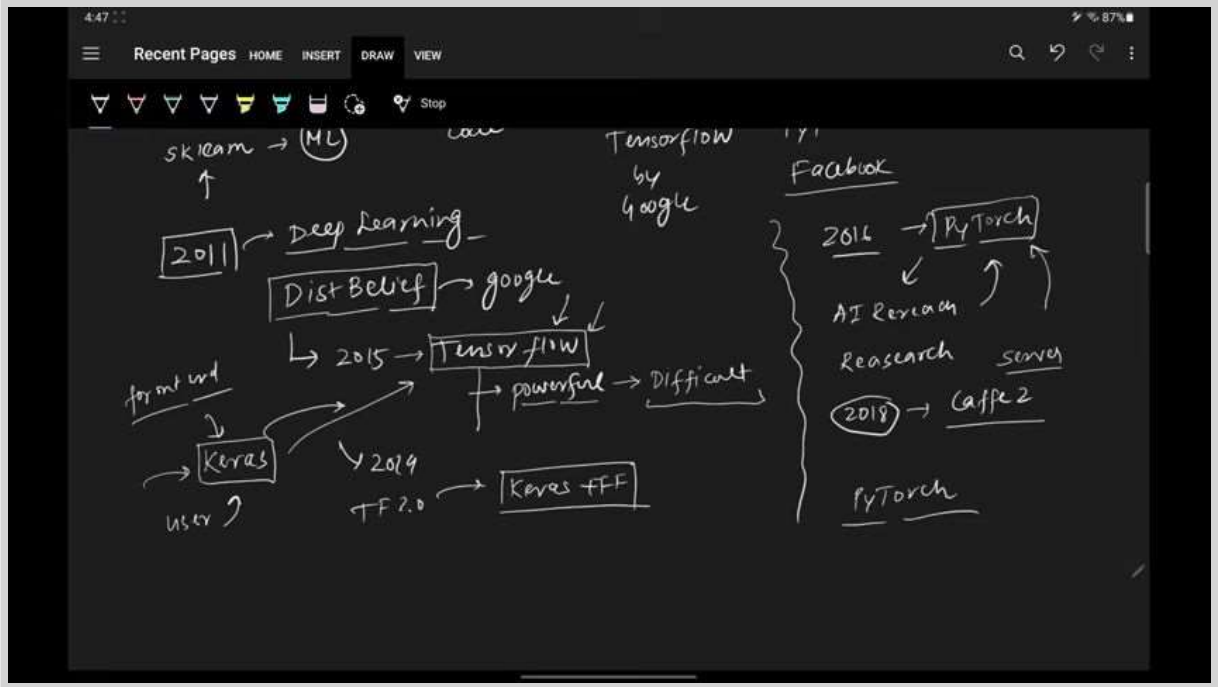
Keras
user
2019
TF 2.0 → Keras tf.f

[56:57]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Facebook
2011 → Deep Learning
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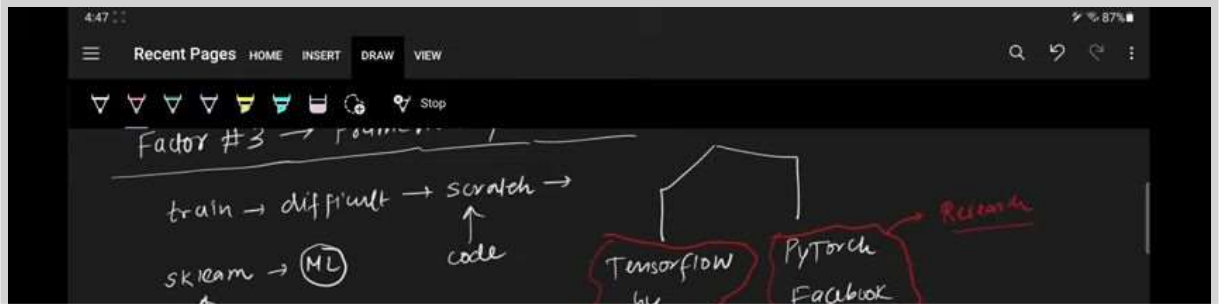
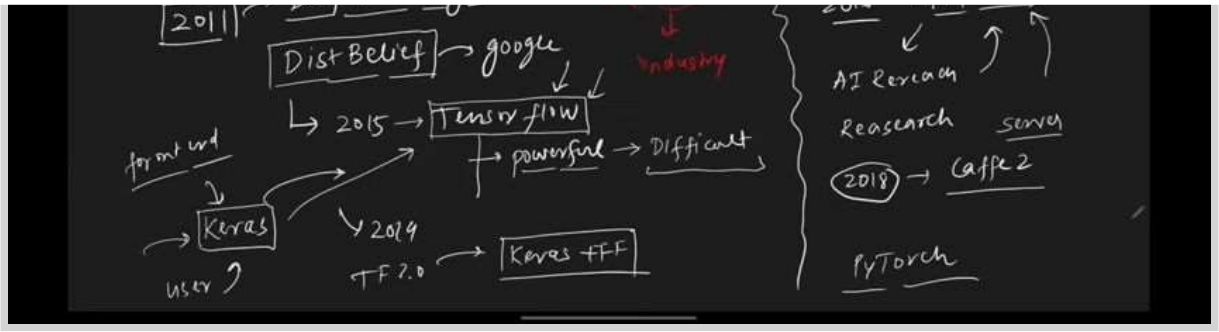
AI Research
Research
server
2018 → Caffe 2
PyTorch

[57:14]





Sometime we need convert one into another.

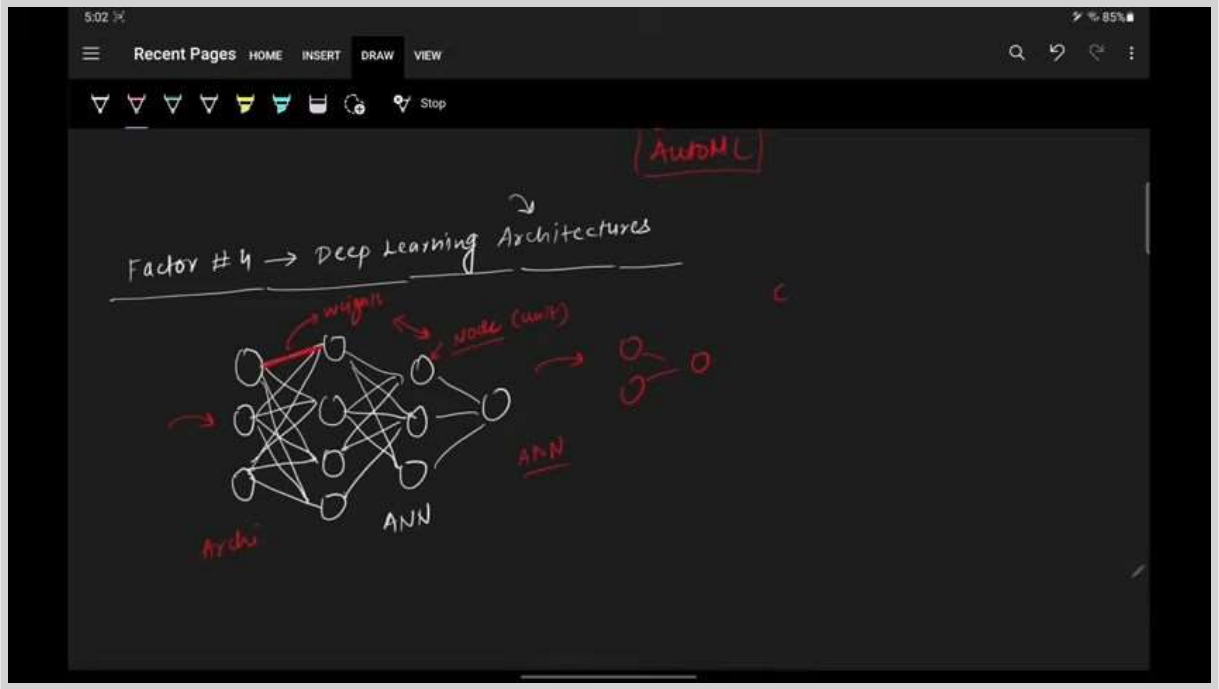
DropDown GuI based application.

AutoML-

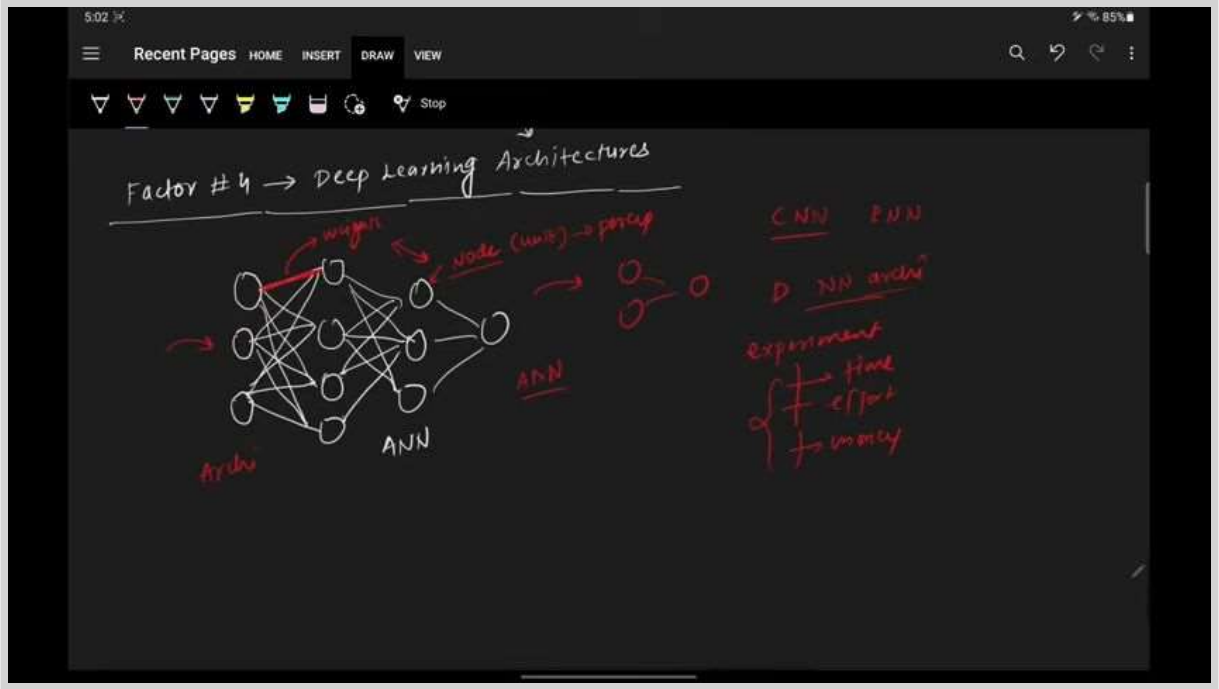
CustomVision AI

DeepLearning Architectures:

[01:00:30]



[01:01:17](#)



Existing Architecture:

Ready to use known as Transfer learning.

State-of-the-art accuracy

01:04:07

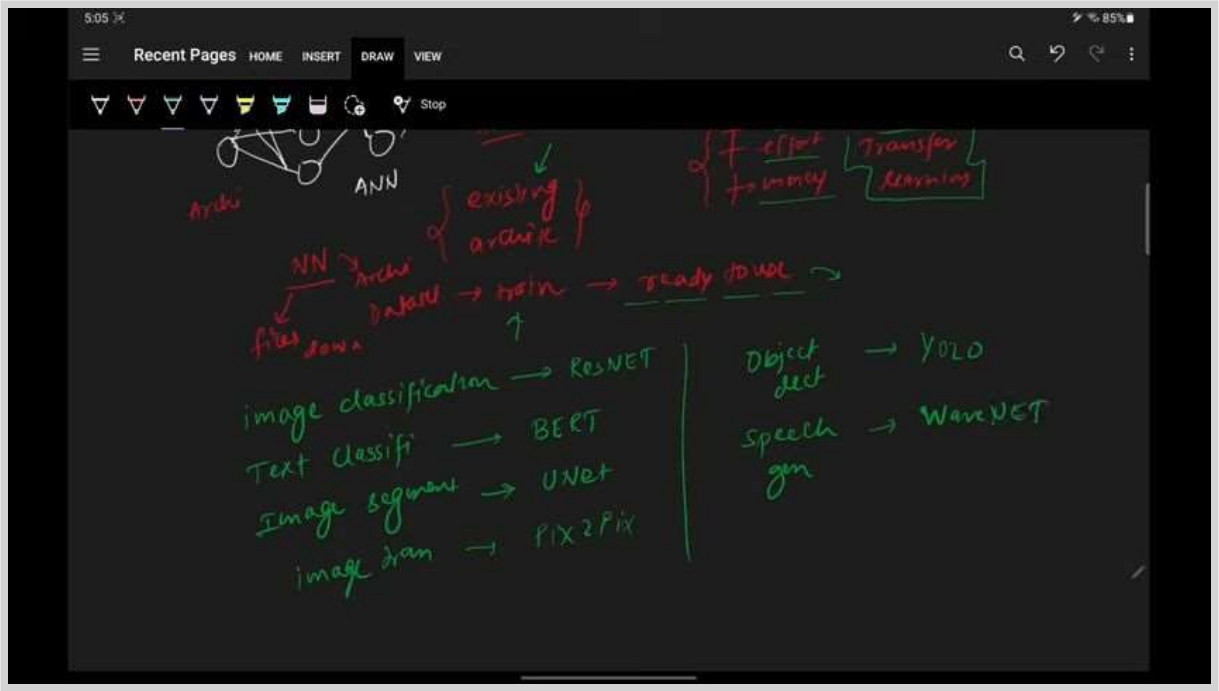


Image Classification: ResNET

Text classification -> BERT

Image segment ->UNet

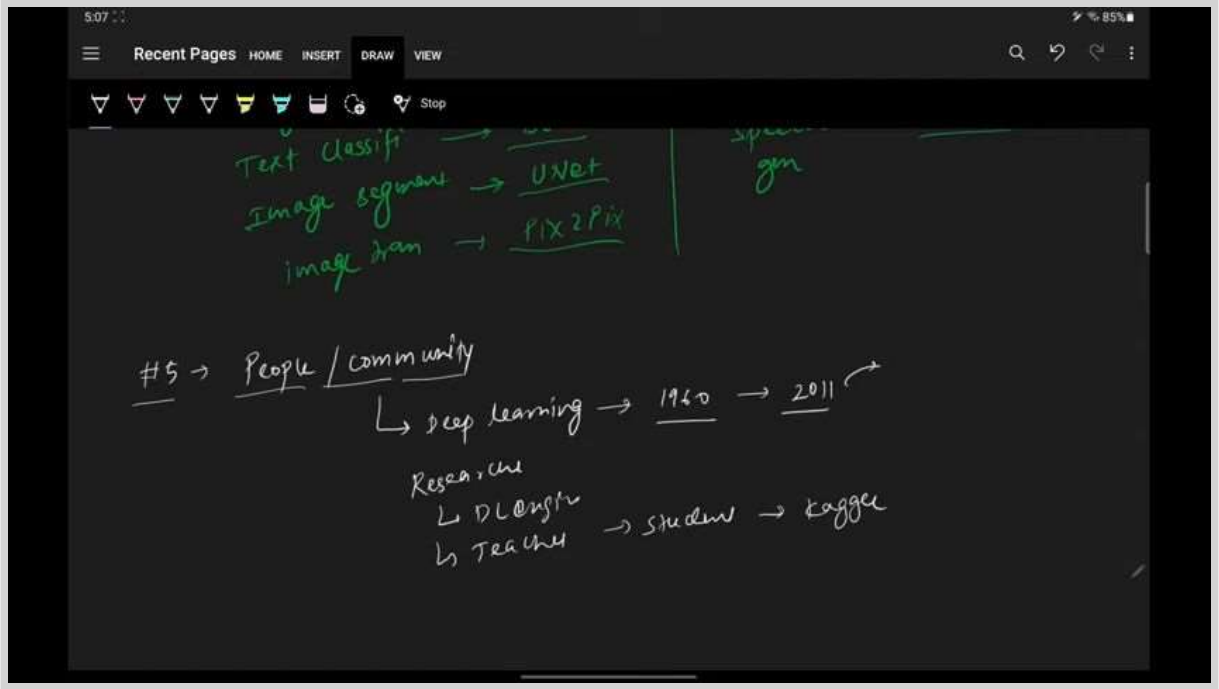
image translation-> Pix2Pix

Object dectation ->YOLO

Speech ->WaveNET

Community:

01:05:36


5:07
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Recent Pages
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#5 → People / community
↳ Deep learning → 1960 → 2011
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