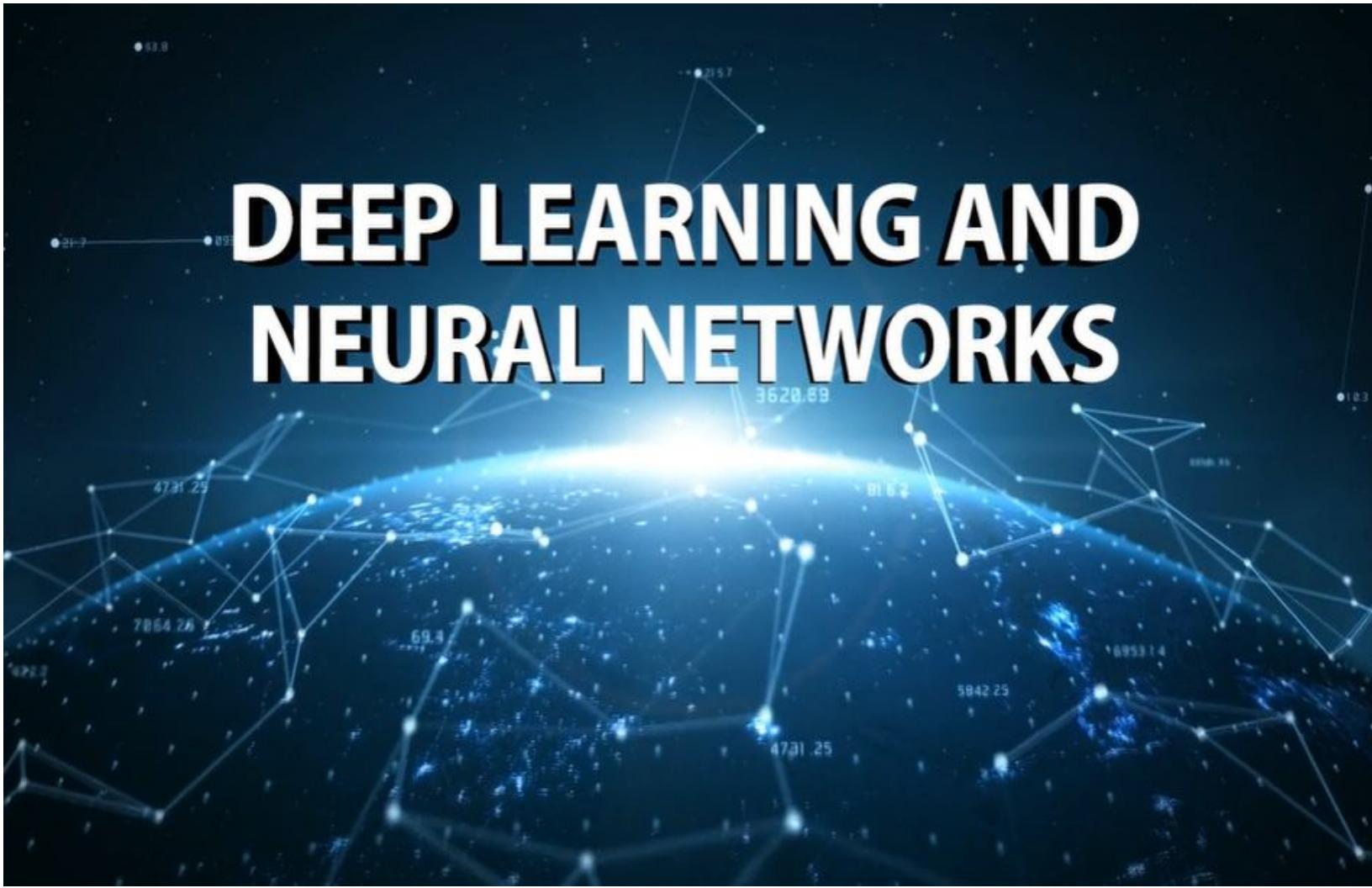


DEEP LEARNING AND NEURAL NETWORKS



IN THIS COURSE...

Working of Deep Learning

Working of Neural Networks

Types of Neural Networks

Artificial Neural Network

Recurrent Network



- ▶ Applications of networks
- ▶ Function of Neural Network
- ▶ Steps involved

IN THIS COURSE...

Deep learning concepts

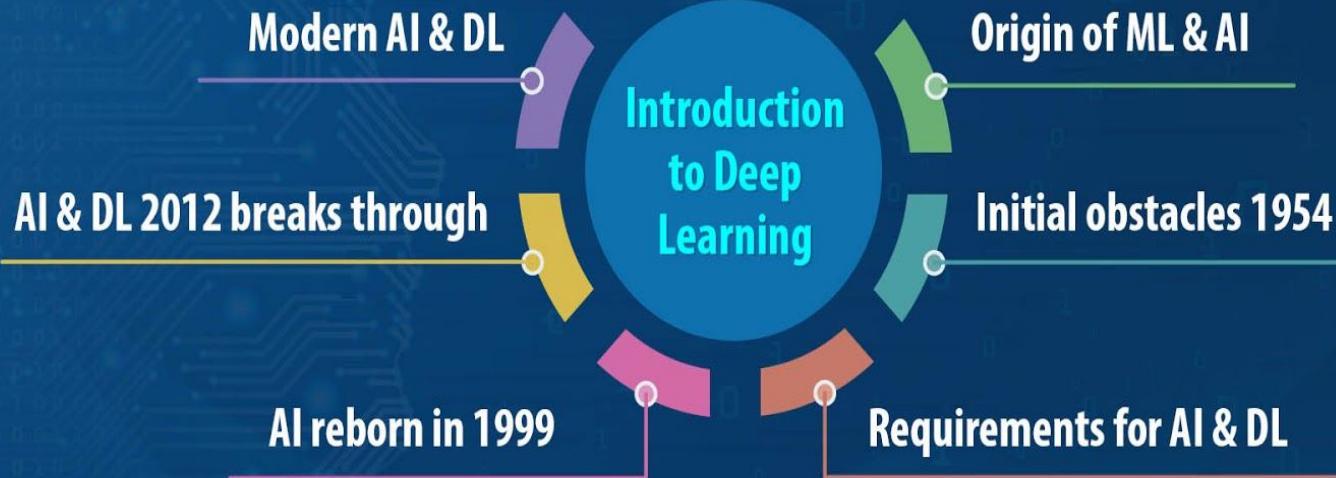


Reason behind studying
deep learning

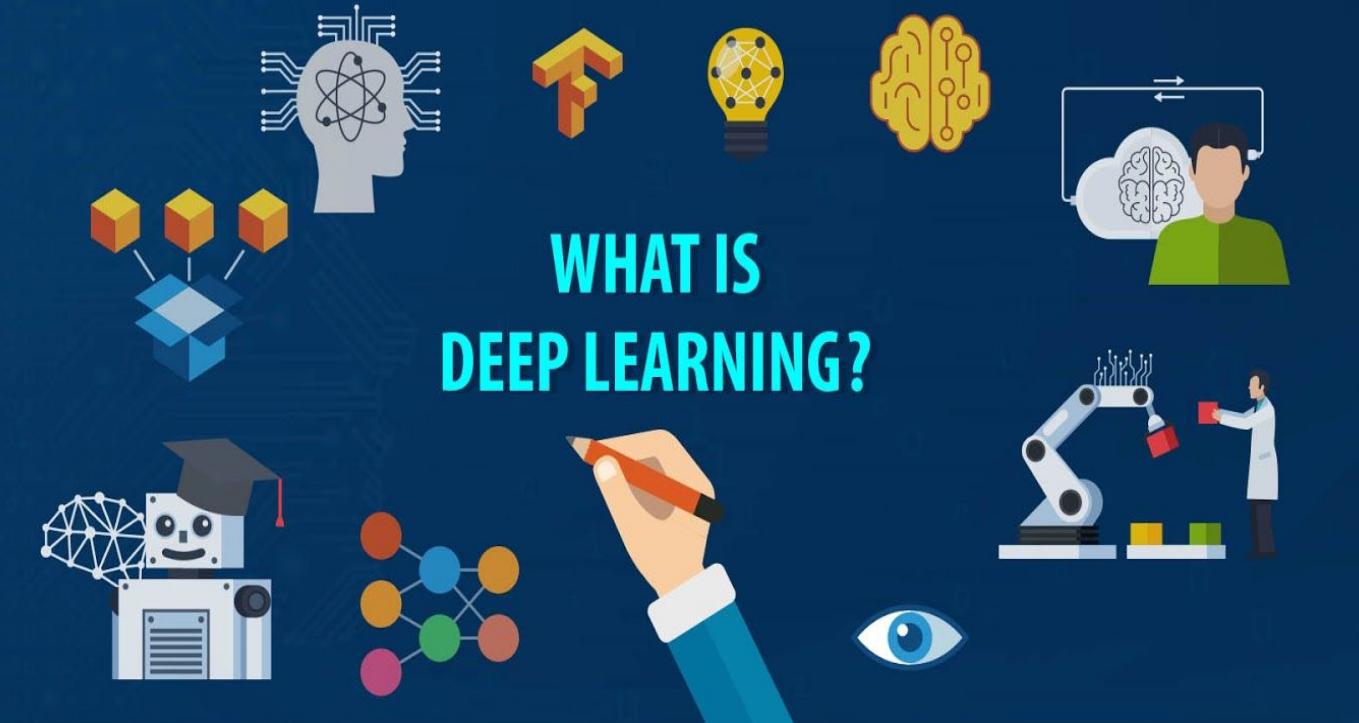


Advantages of DL over ML

OBJECTIVES



WHAT IS DEEP LEARNING?



INTRODUCTION TO DEEP LEARNING

ARTIFICIAL
INTELLIGENCE



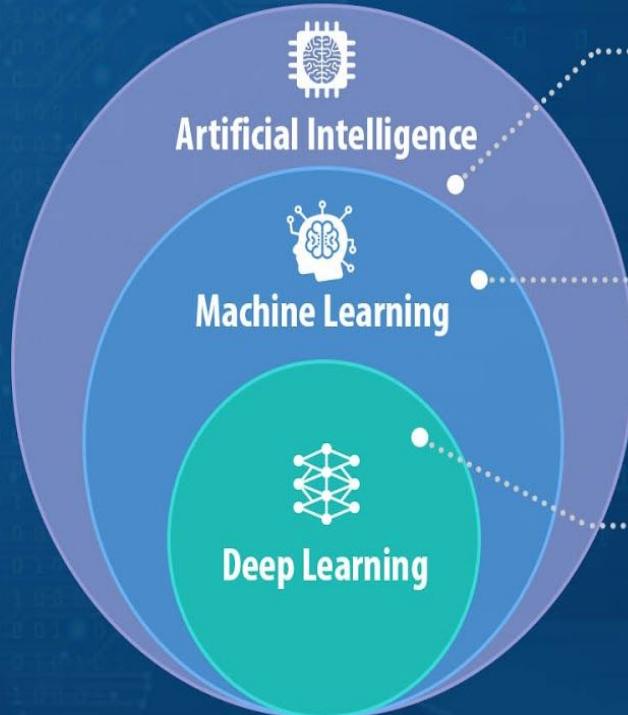
MACHINE
LEARNING



DEEP
LEARNING



INTRODUCTION TO DEEP LEARNING



ARTIFICIAL INTELLIGENCE

A technique which involve machines to mimic human behaviour

MACHINE LEARNING

Subset of AI technique which use statistical method to enable machines to improve with experience.

DEEP LEARNING

Subset of ML which make the computation of multi-layer neural network feasible

INTRODUCTION TO DEEP LEARNING



Intelligence is due to learning
from past experience

Data → Comprehension → Develops mapping → Prediction

INTRODUCTION TO DEEP LEARNING



INTRODUCTION TO DEEP LEARNING



INTRODUCTION TO DEEP LEARNING



Do not touch hot substances

INTRODUCTION TO DEEP LEARNING

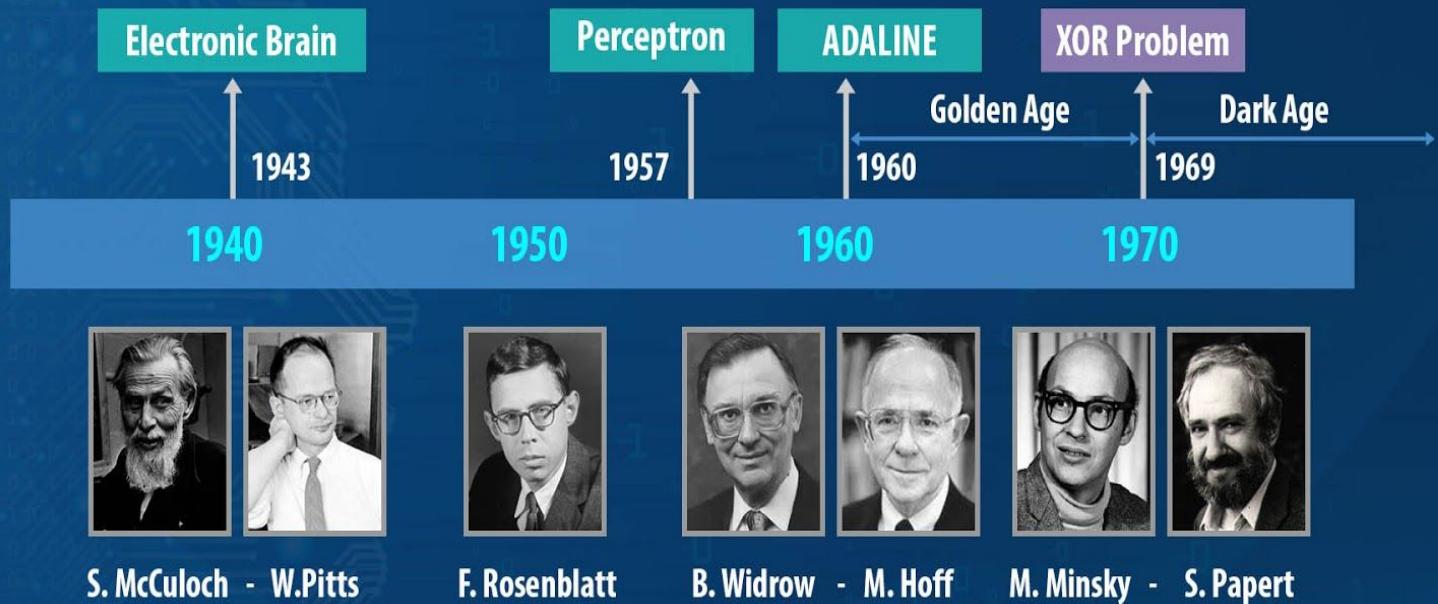


INTRODUCTION TO DEEP LEARNING

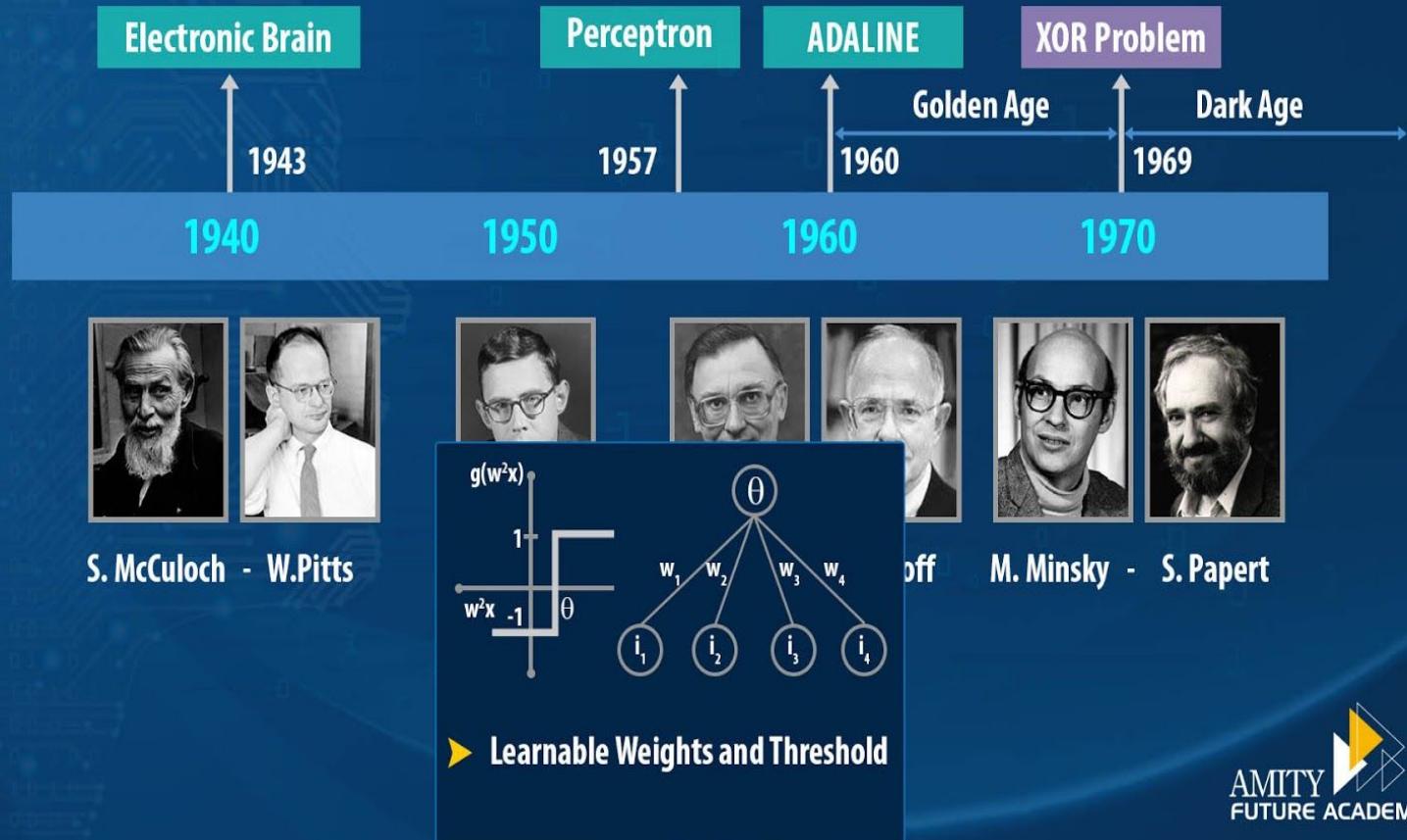


Limitation : Comprehension of only given data

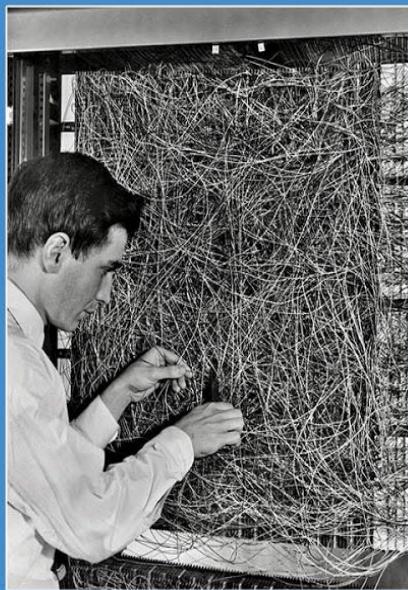
ORIGIN OF ML & AI



ORIGIN OF ML & AI



FIRST PERCEPTRON



Major drawback:
Large data to process
High computational power

The Design of An



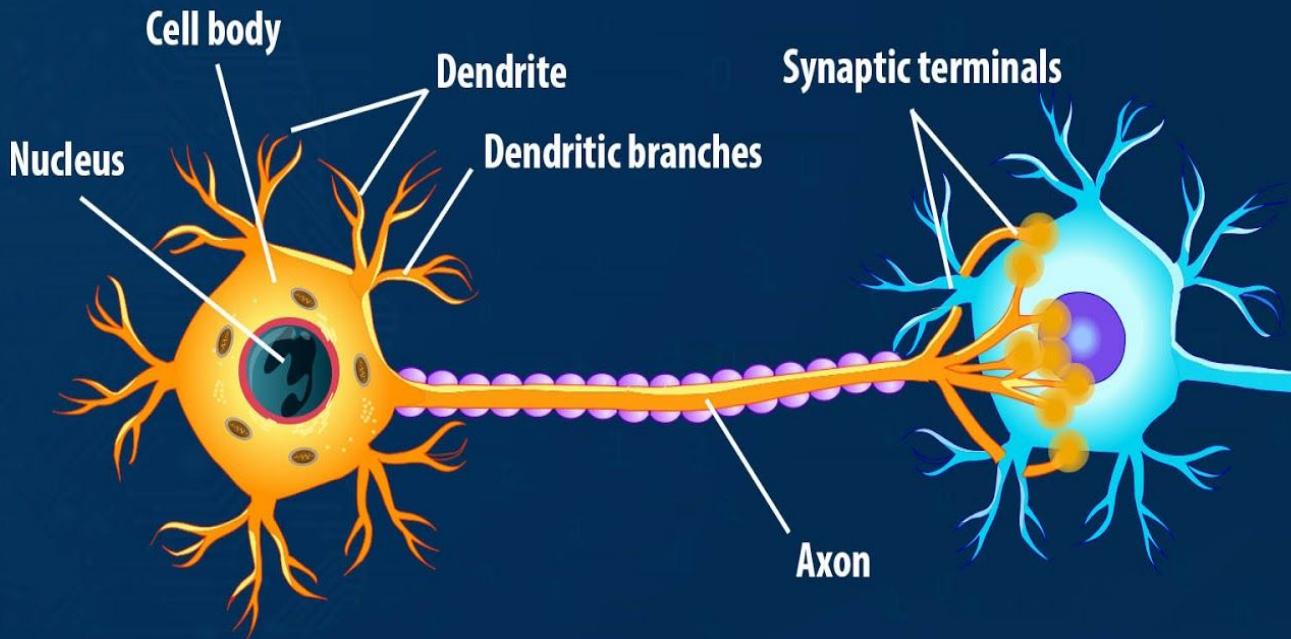
Intelligent



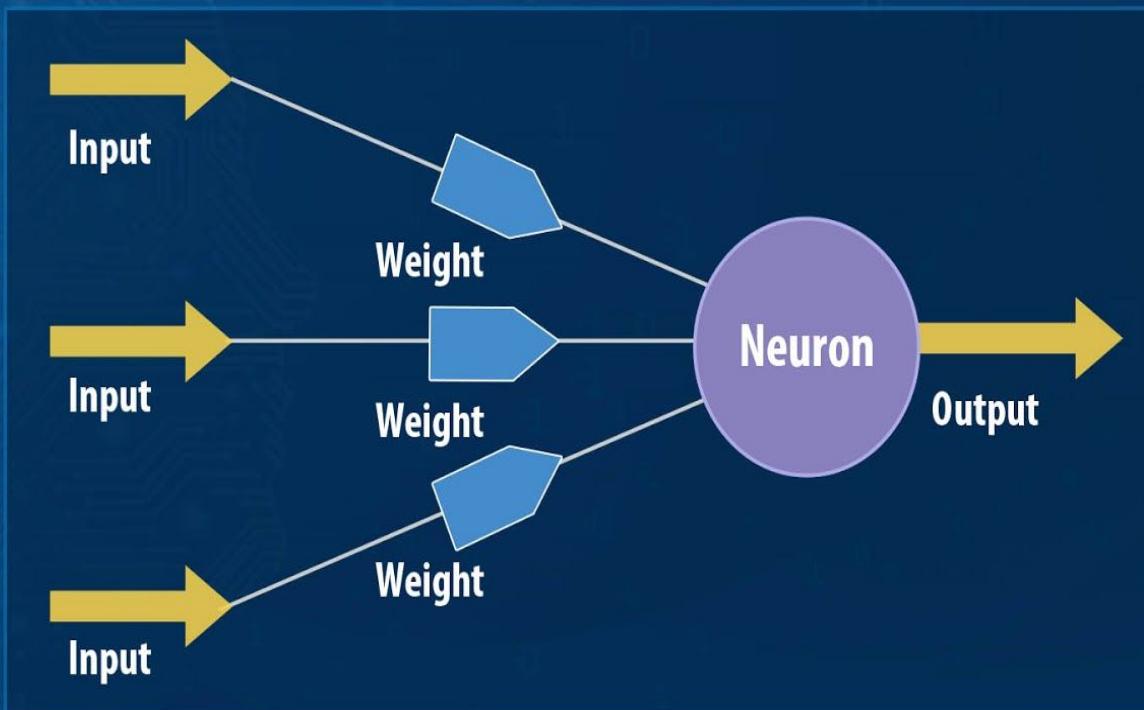
Automation

by FRANK ROSENBLATT

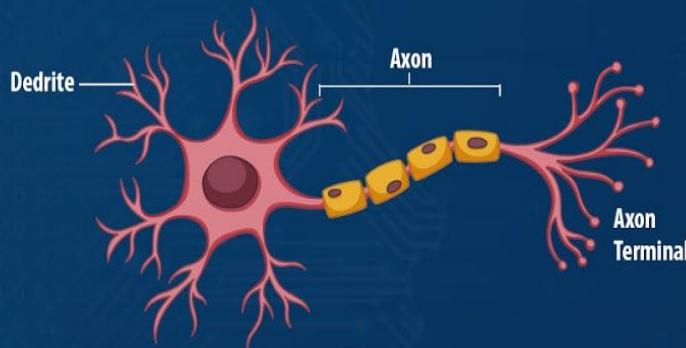
Introducing the perceptron - A machine which senses,
recognizes, remembers, and responds like the human mind.



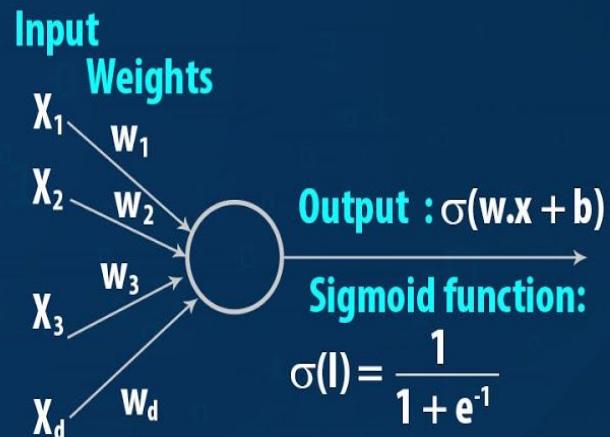
PERCEPTRON



BIOLOGICAL NEURON AND PERCEPTRONS



A Biological Neuron

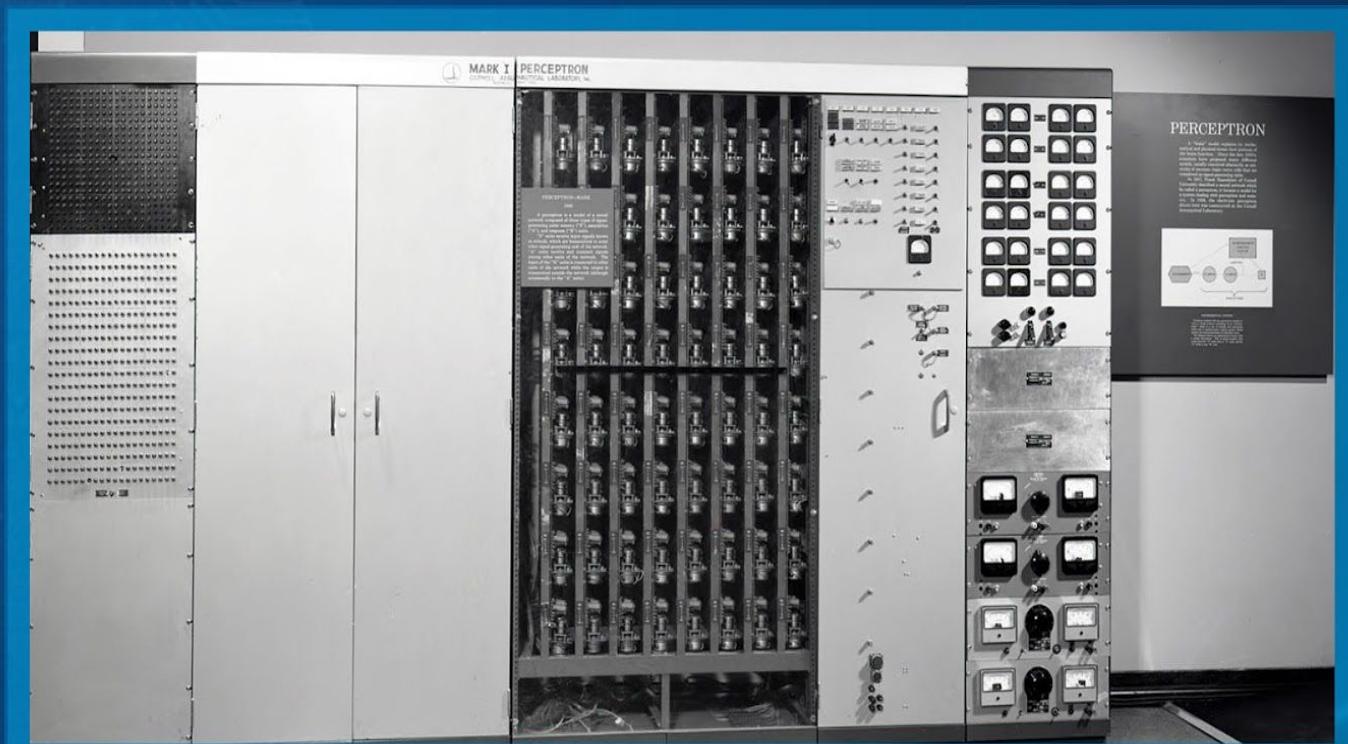


An Artificial Neuron (Perceptron)
- a linear classifier

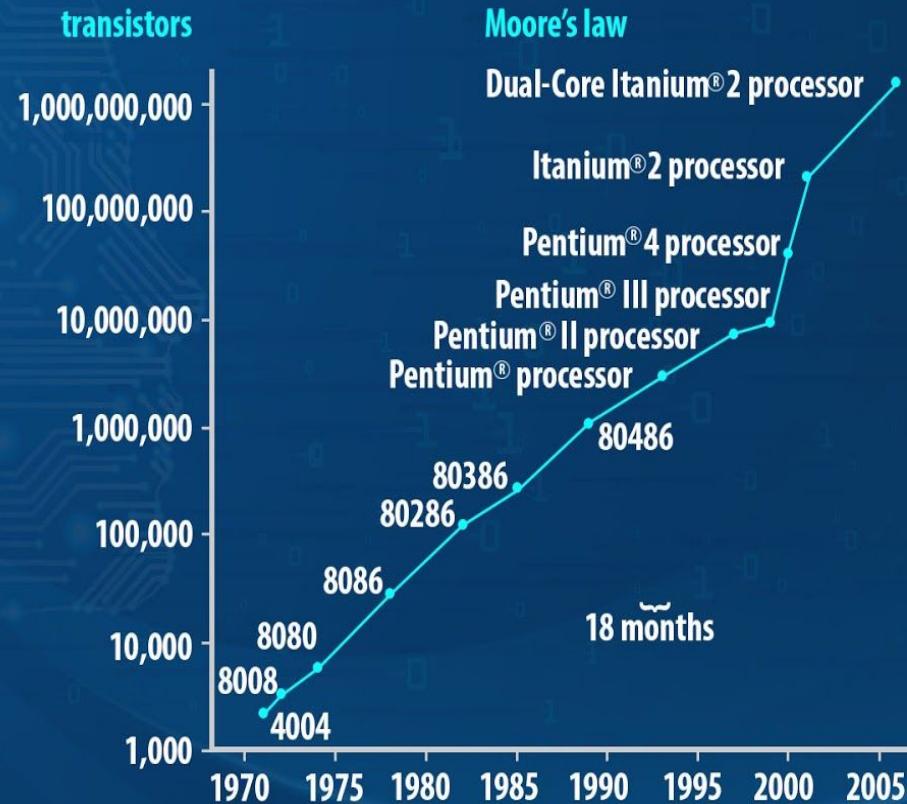
LEARNING PROCESS



MARK 1 PERCEPTRON



SLOW COMPUTING POWER



COSTLY & INEFFICIENT MEMORY

- ▶ **305 RAMAC.** It was the first commercial computer. To put it in today's terms, the colossal machine held about 5MB of data.
- ▶ **US\$3,200 (equivalent to \$29,130 in 2019) per month**

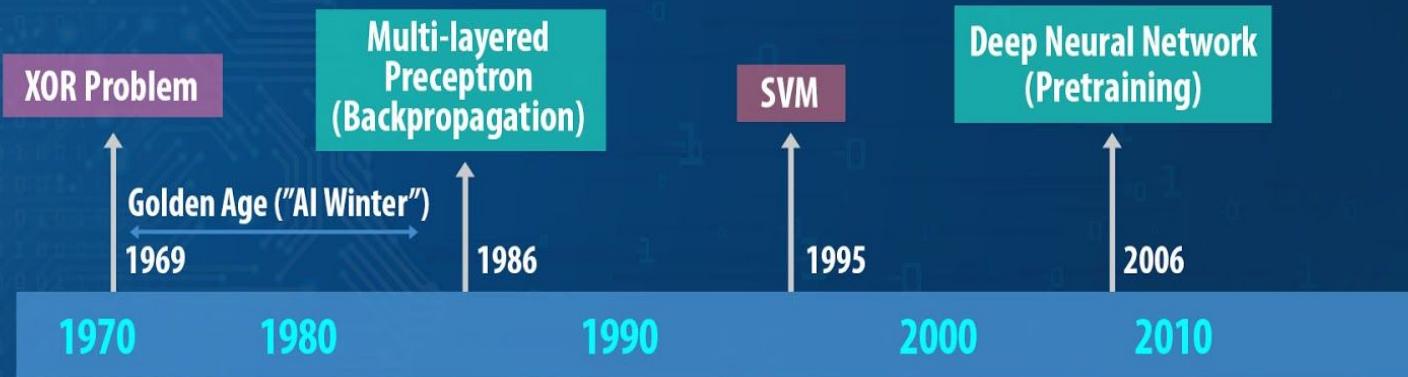


COSTLY & INEFFICIENT MEMORY

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ORIGIN OF ML & AI



S. Papert



D. Rumelhart - G. Hinton - R. Williams

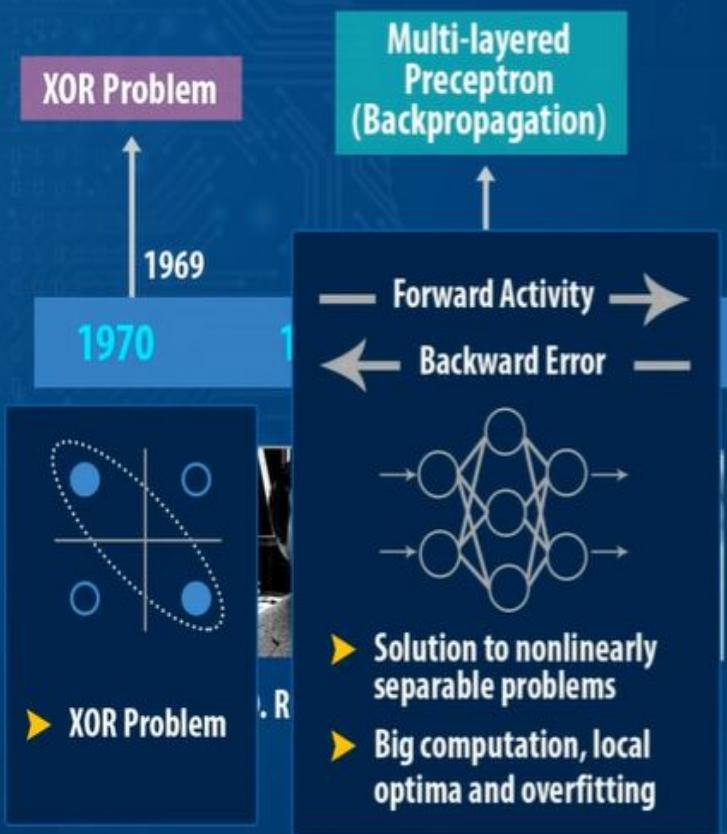


V. Vapnik - C. Cortes

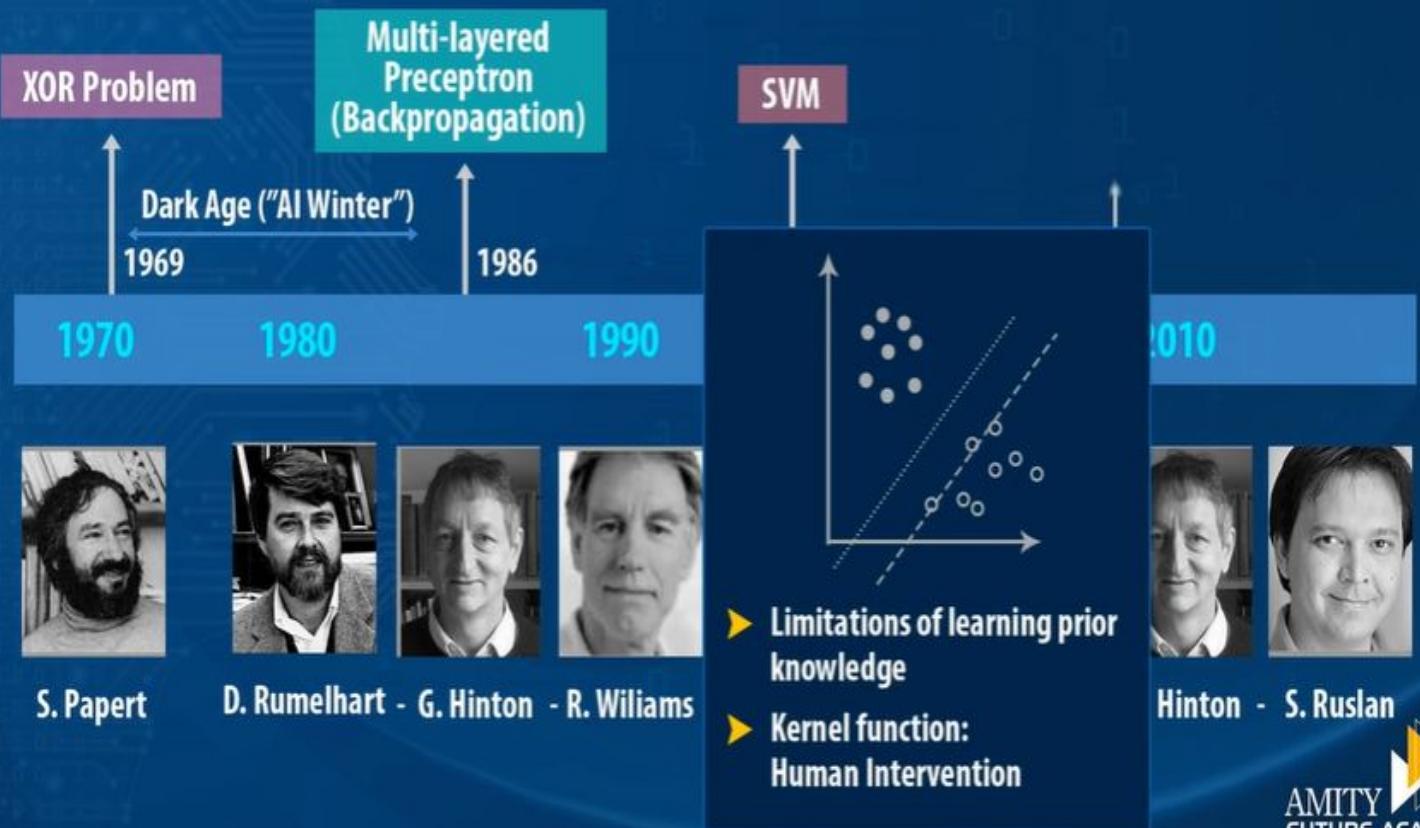


G. Hinton - S. Ruslan

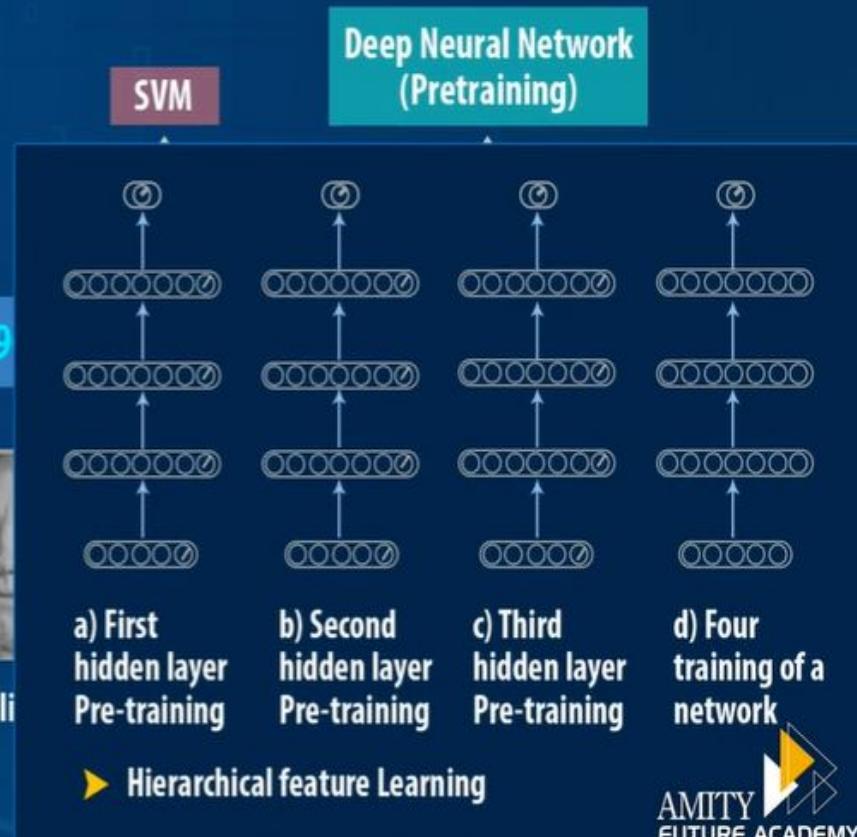
ORIGIN OF ML & AI



ORIGIN OF ML & AI



ORIGIN OF ML & AI



MODERN NEURAL NETWORK

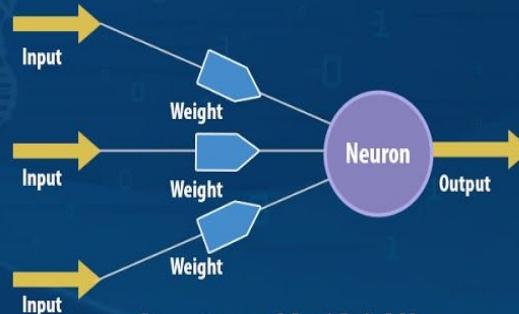
Machine learns through

Coding



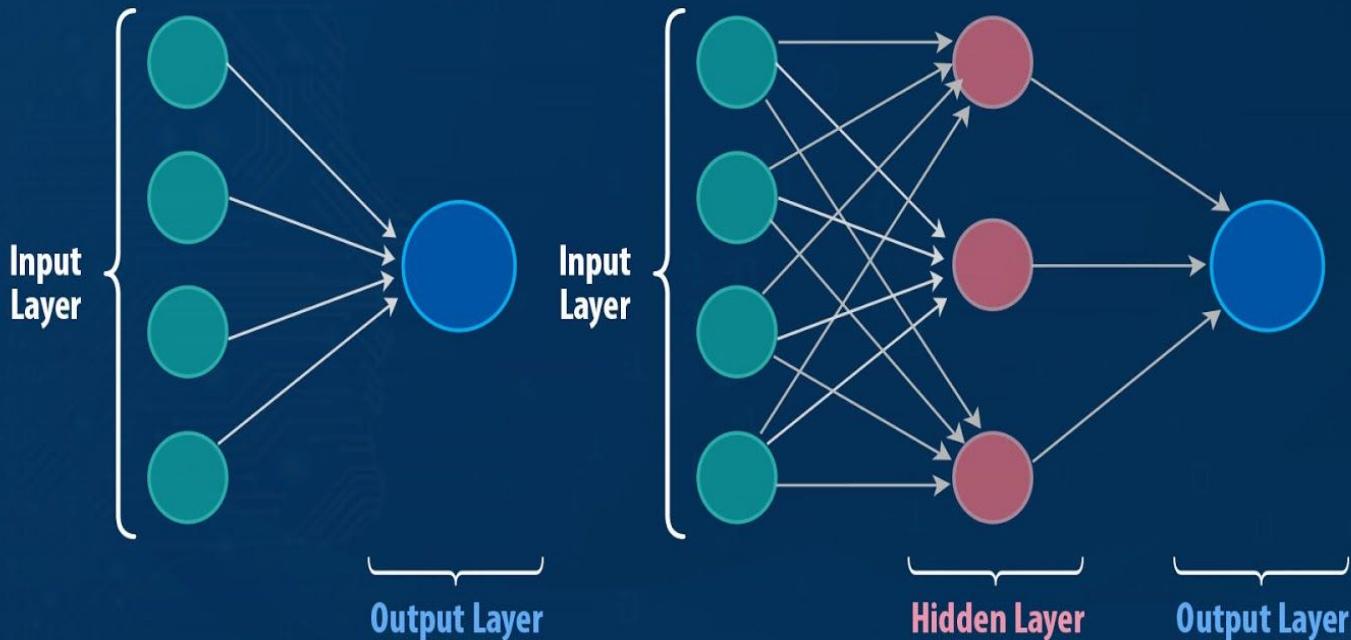
Coding

Train models



Professor Geoffrey Hinton

SINGLE VS MULTI LAYER PERCEPTRONS



DATA REVOLUTION

1980 - 1990



Not Enough Data to Supply to the Machines

DATA REVOLUTION

Just Started off



Released to
Public in 1990



DATA REVOLUTION

2016

Jio



2G

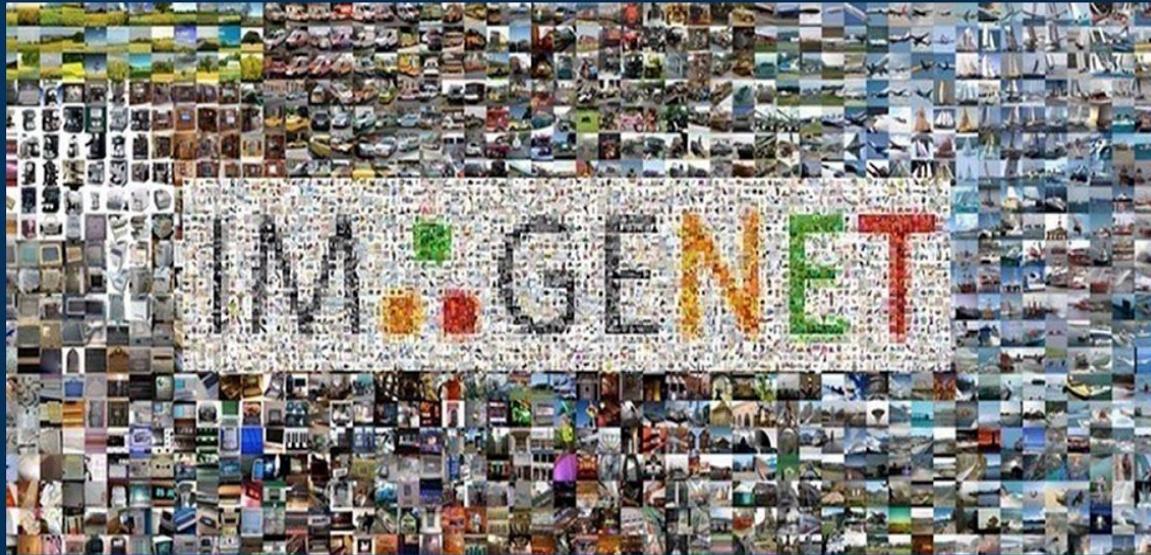


3G



2012 BREAKTHROUGH

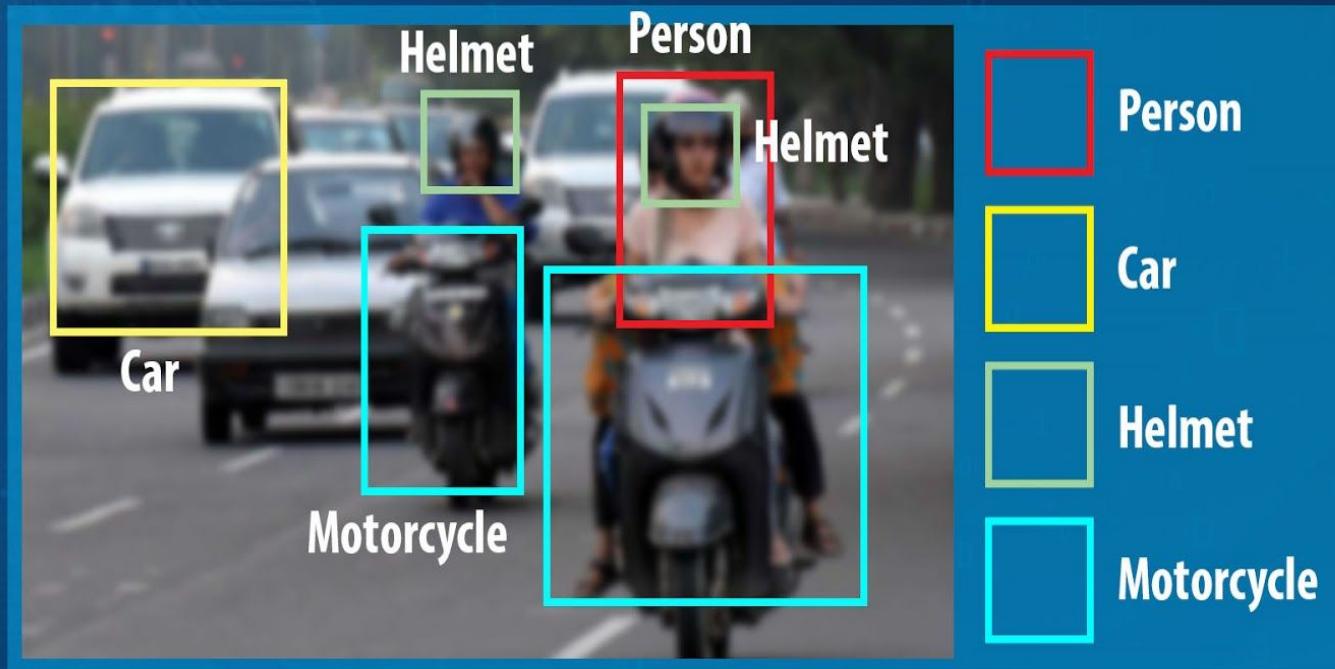
2000 - 2010



Deep Learning Engine.

Able to classify Images very accurately.

2012 BREAKTHROUGH



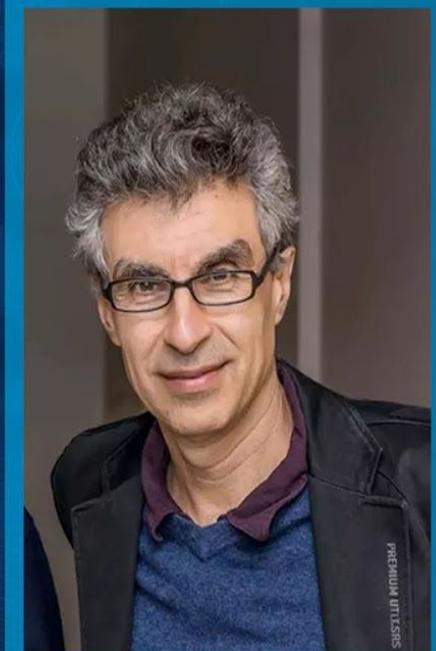
GODFATHERS OF AI



Yann LeCun



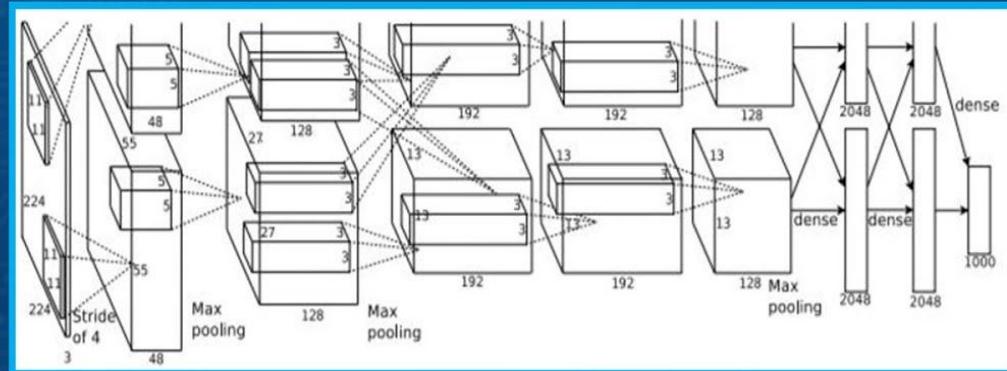
Geoffrey Hinton



Yoshua Bengio

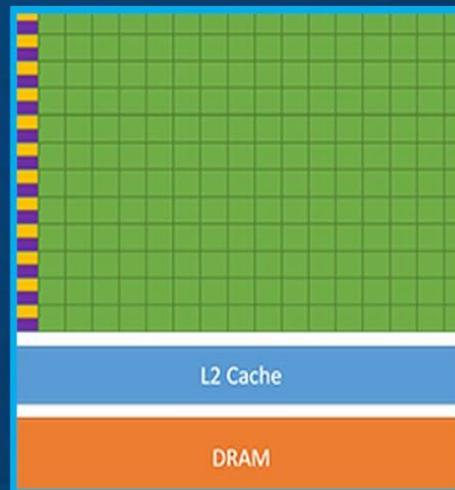
IMAGENET

AlexNet



IMAGENET

To identify the object



IMAGENET



