

Starting your AI Journey

Goals

What is
Learning?

History of ML

ML/DL
Nowadays

Train your
first AI

Starting your AI Journey

October 6, 2025

What **YOU** will learn?

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- ① How machines learn?
- ② Basic algorithm vs. Machine Learning model
- ③ Build you first model with teachable machines.

Human Learning

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- to get new knowledge or skill in a subject or activity (*Cambridge Dictionary*);

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Discussion: How to teach a seven grader basic geometry - how to compute perimeters and areas?

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Discussion: How to teach a seven grader basic geometry - how to compute perimeters and areas?

- Teacher (or supervisor) who knows the topic.
- Theory and do some basic problems.
- Exercises. Teacher corrects the mistakes and guides in the right direction.

Human Learning

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Discussion: How to teach a seven grader basic geometry - how to compute perimeters and areas?

- Teacher (or supervisor) who knows the topic.
- Theory and do some basic problems.
- Exercises. Teacher corrects the mistakes and guides in the right direction.
- Testing the knowledge.

Tom Mitchell - ML Definition 1997

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*A computer program is said to learn from **experience E** with respect to some **task T** and some **performance measure P**, if its performance on **T**, as measured by **P**, improves with experience **E**.*

Tom Mitchell - ML Definition 1997

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task T \implies

Tom Mitchell - ML Definition 1997

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*A computer program is said to learn from **experience E** with respect to some **task T** and some **performance measure P**, if its performance on **T**, as measured by **P**, improves with experience **E**.*

task **T** \implies learning to compute areas and perimeters
experience E \implies

Tom Mitchell - ML Definition 1997

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*A computer program is said to learn from **experience E** with respect to some **task T** and some **performance measure P**, if its performance on **T**, as measured by **P**, improves with experience **E**.*

task **T** \implies learning to compute areas and perimeters
experience **E** \implies supervisor who teach and guides you.
performance P \implies

Tom Mitchell - ML Definition 1997

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*A computer program is said to learn from **experience E** with respect to some **task T** and some **performance measure P**, if its performance on **T**, as measured by **P**, improves with experience **E**.*

task T \implies learning to compute areas and perimeters
experience E \implies supervisor who teach and guides you.
performance P \implies grade of the test.

Traditional programming

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Computing perimeters and areas \implies easy algorithm.

Traditional programming

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Computing perimeters and areas \implies easy algorithm.



INPUT



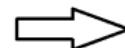
COMPUTER



PROGRAM
(Algorithm)



OUTPUT



Human Learning - Harder Task

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Example: Teach a 3 years old to recognize color **red**?

Human Learning - Harder Task

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Example: Teach a 3 years old to recognize color **red**?



Testing - Is this red?

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Testing - Is this red?

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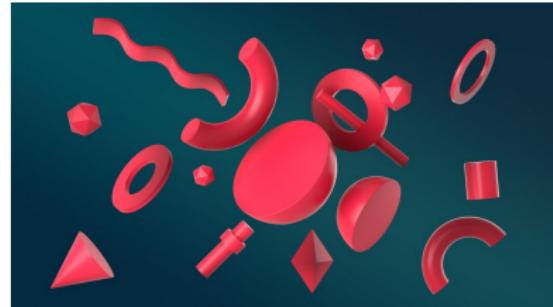
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Based on the given data, yes it is.

Conclusion of Human Learning



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- Need some **different** red objects.

Conclusion of Human Learning

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- Need some **different** red objects.
- Need some **NOT** red objects.

Conclusion of Human Learning

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- Need some **different** red objects.
- Need some **NOT** red objects.
- *Features* of the items.

Conclusion of Human Learning

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- Need some **different** red objects.
- Need some **NOT** red objects.
- *Features* of the items.
- *Correcting* the wrong answers.

Conclusion of Human Learning

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- Need some **different** red objects.
- Need some **NOT** red objects.
- *Features* of the items.
- *Correcting* the wrong answers.
- Show some new items to test the understanding.

ML Programming

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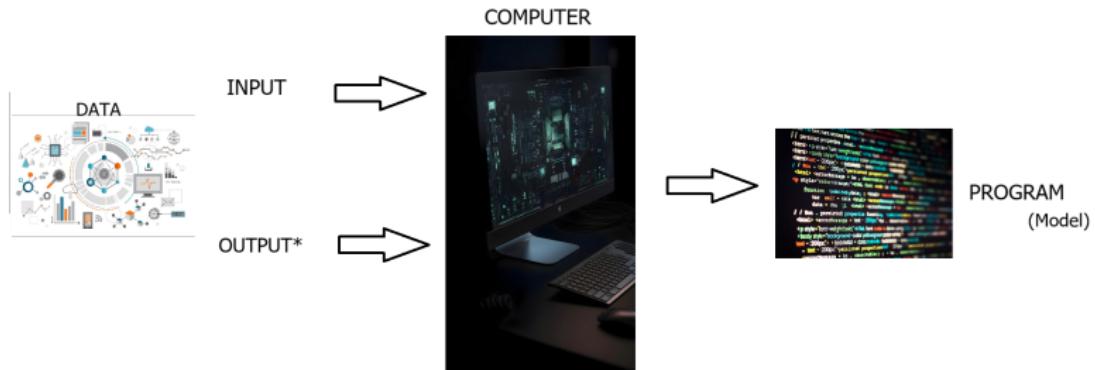
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ML Programming

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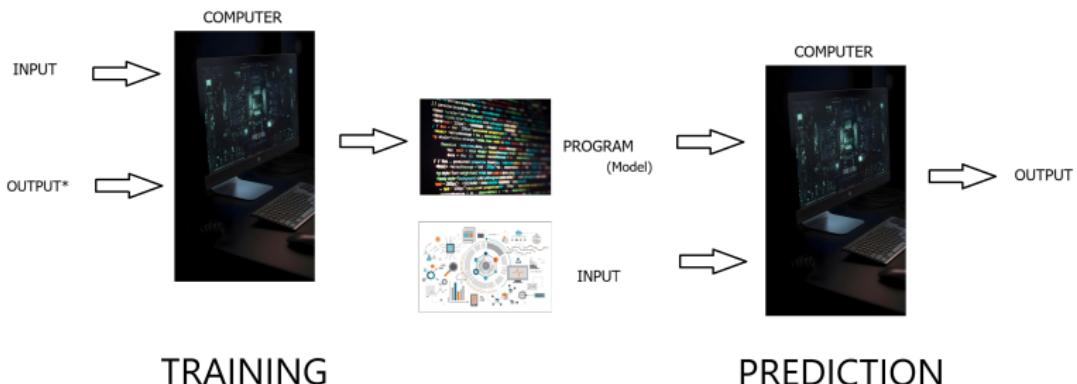
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What exactly is ML?

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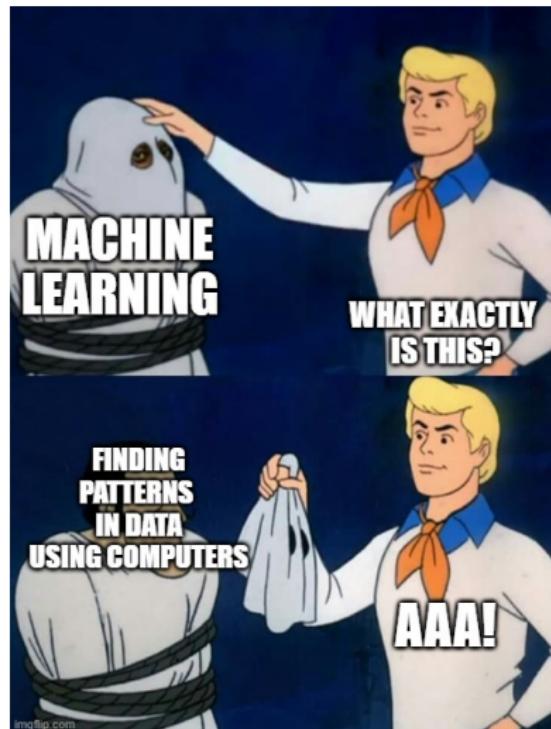
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How it started?

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How it started?

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1950s - Turing Test by Alan Turing

Arthur Samuel - Checkers (1952-1959)

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- self-learning checkers-playing program
- first use of term *machine learning*

Frank Rosenblatt - Perceptron (1957)

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The *grandpa* of artificial neural networks

FIG. 1 — Organization of a biological brain. (Red areas indicate active cells, responding to the letter X.)

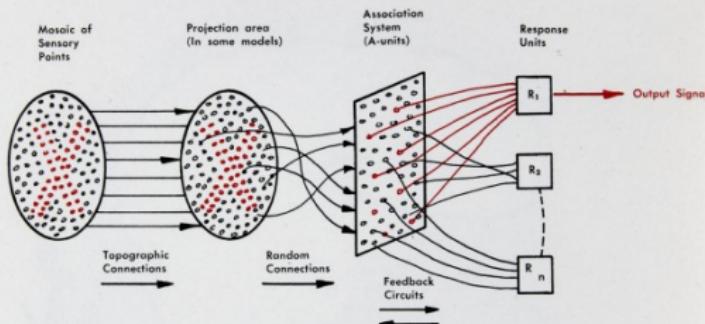


FIG. 2 — Organization of a perceptron.

Figure: Perceptron

Vulnerability of Perceptron - Winter in AI (1969)

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Vulnerability of Perceptron - Winter in AI (1969)

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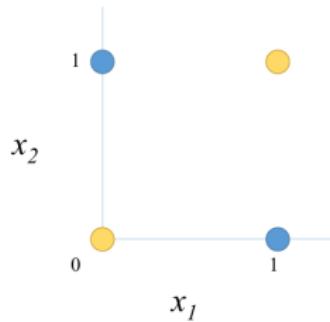
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Vulnerability of Perceptron - Winter in AI (1969)

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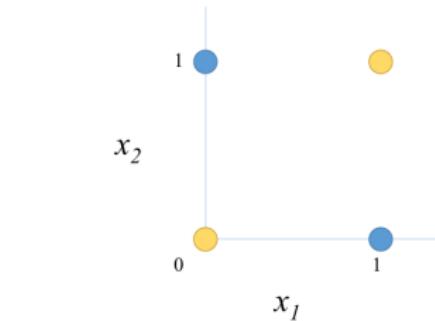


Figure: XOR function

TD-Gammon - 1990s

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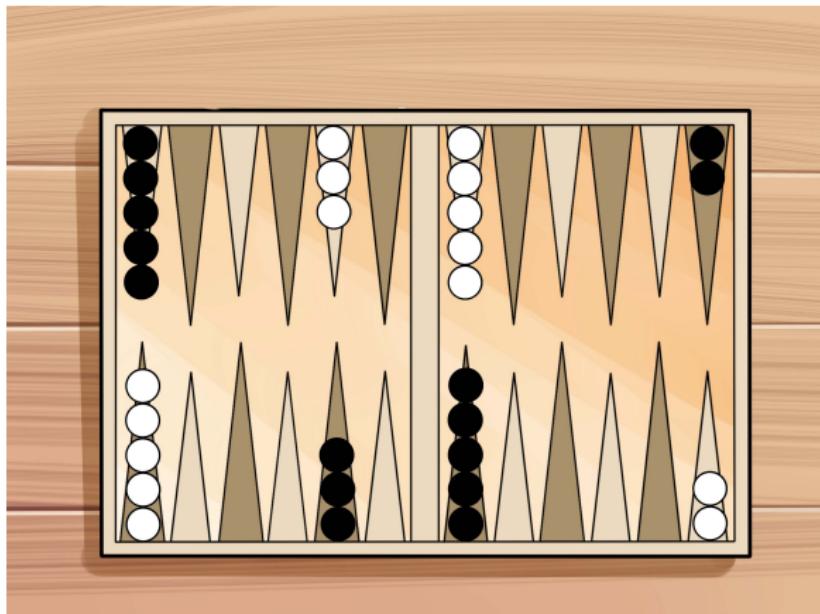


Figure: Backgammon - Gerald Tesauro

Deep Blue (1997)

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Deep Blue (1997)

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Figure: Deep Blue - Chess game

Change of Focus - 1990s and 2000s

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imitating human logic \implies *solving specific tasks*

LOGIC \implies OPTIMIZATION

Rise of Deep Learning - 2010s to present

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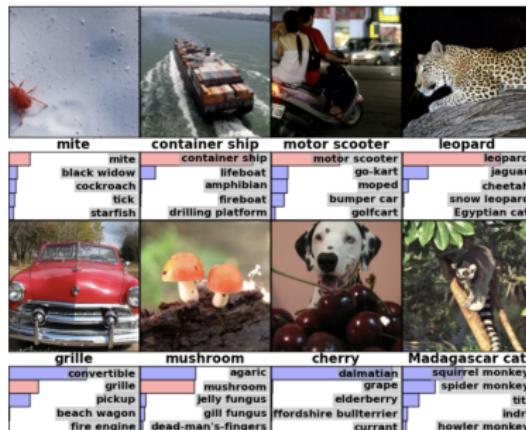
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AlexNet (Convolutional Neural Networks) - 2010s

- larger datasets
- larger network
- better computational resources



Recommendation systems

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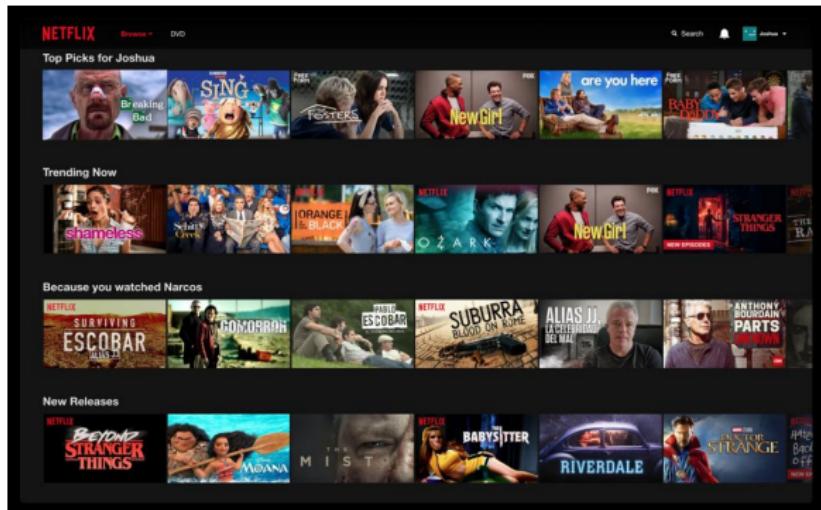


Figure: Recommend similar content

Recommendation systems

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Figure: Recommend similar content

Information Bubble

Autonomous Cars

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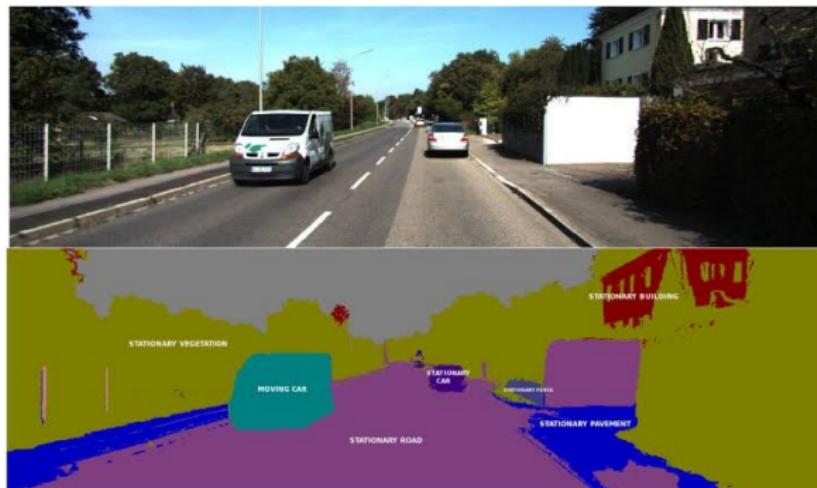


Figure: Semantic Segmentation

Image Classification

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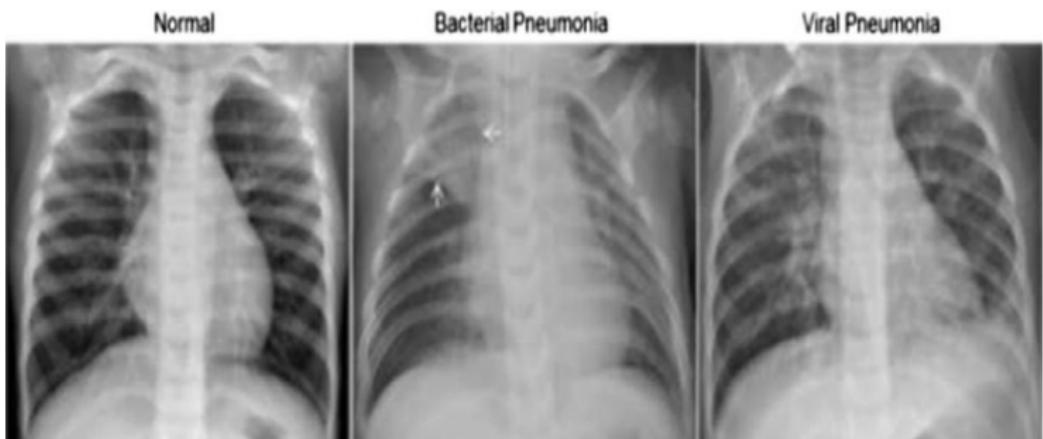


Figure: Pneumonia Detection

Mirel

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Figure: AI in Robotics

Large Language Models

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Figure: GPT - Turing test

AGI? :)

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Logan Kilpatrick @OfficialLoganK · 7h

How long until AGI?

292

45

410

90K



Elon Musk X

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Teachable Machine