

Artificial Intelligence and Machine Learning

Agenda

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6. Why now?
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8. N-Queen Problem
9. Machine Learning
10. Supervised Learning
11. Unsupervised Learning
12. Tools & Frameworks

Introduction

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Intelligence

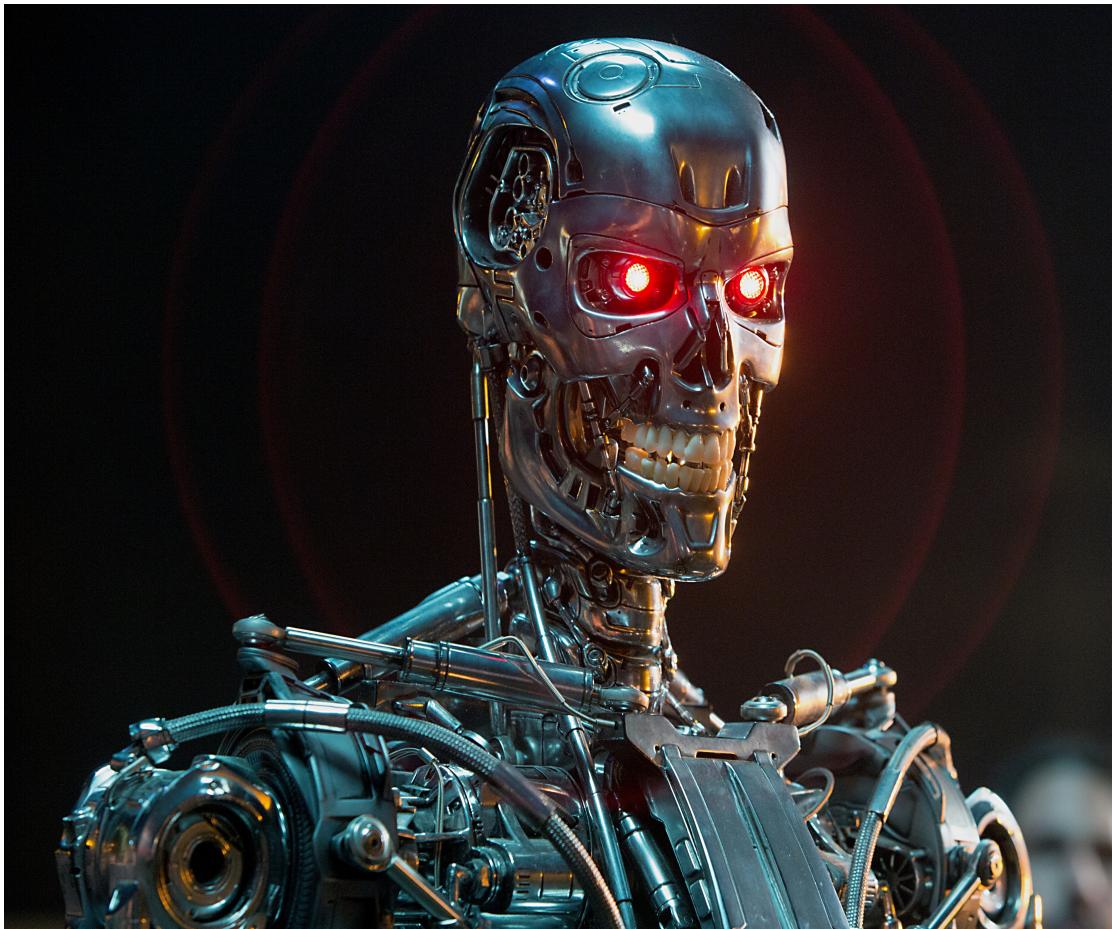
"Intelligence is the aggregate or global capacity of the *individual* to act purposefully, to think rationally and to deal effectively with his environment"

- Wechsler, 1944.

Artificial Intelligence



Or, This



Now, we have this.



And this.



ANDROID AUTHORITY

History of Artificial Intelligence

World War II and Enigma



History

Ferranti Mark 1 - 1951

History

Ferranti Mark 1 - 1951

Logic Theorist - 1955

History

Ferranti Mark 1 - 1951

Logic Theorist - 1955

Birth of the Field - 1956

History

Ferranti Mark 1 - 1951

Logic Theorist - 1955

Birth of the Field - 1956

"Machine Learning" - 1959

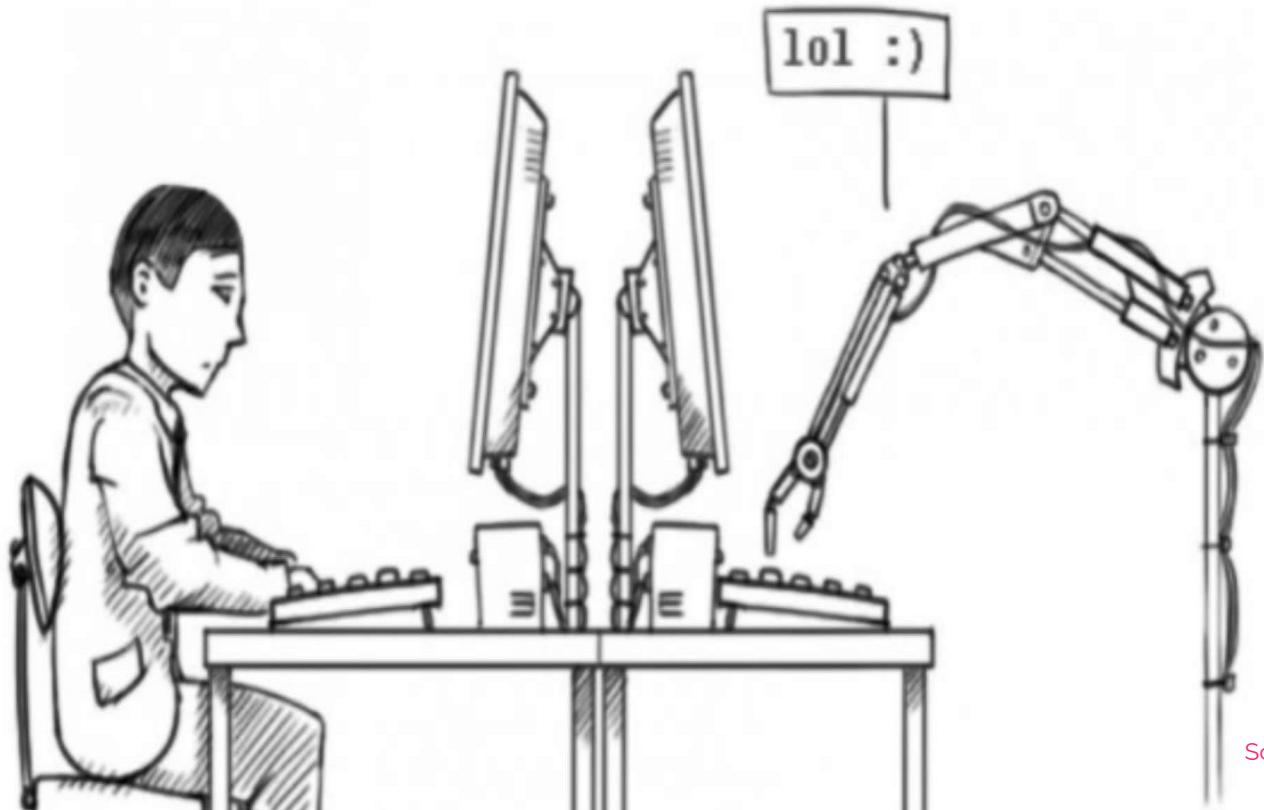
Short History

History of AI

What makes a machine intelligent?

The Turing Test

The Turing Test



Source

Why we need AI?

N-Queen

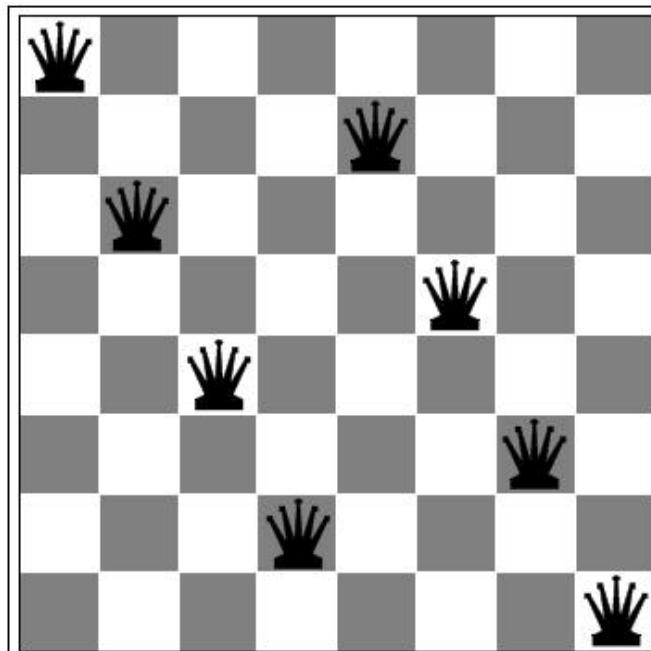


Eight Queen Puzzle

N-Queen

Problem Statement

"The eight queens puzzle is the problem of placing eight chess queens on an 8×8 chessboard so that no two queens threaten each other"



Solution by BackTracking

Complexity $O(n!)$

8 Queens: 40320

9 Queens: 362880

...

15 Queens: 1.3×10^{12}

Solution by Genetic-Algorithm

Generates and keep only the best solution.

Learns to create better generations over time.

With a very good fitness function calculation, can be brought lower.

Machine Learning

AI and Machine Learning

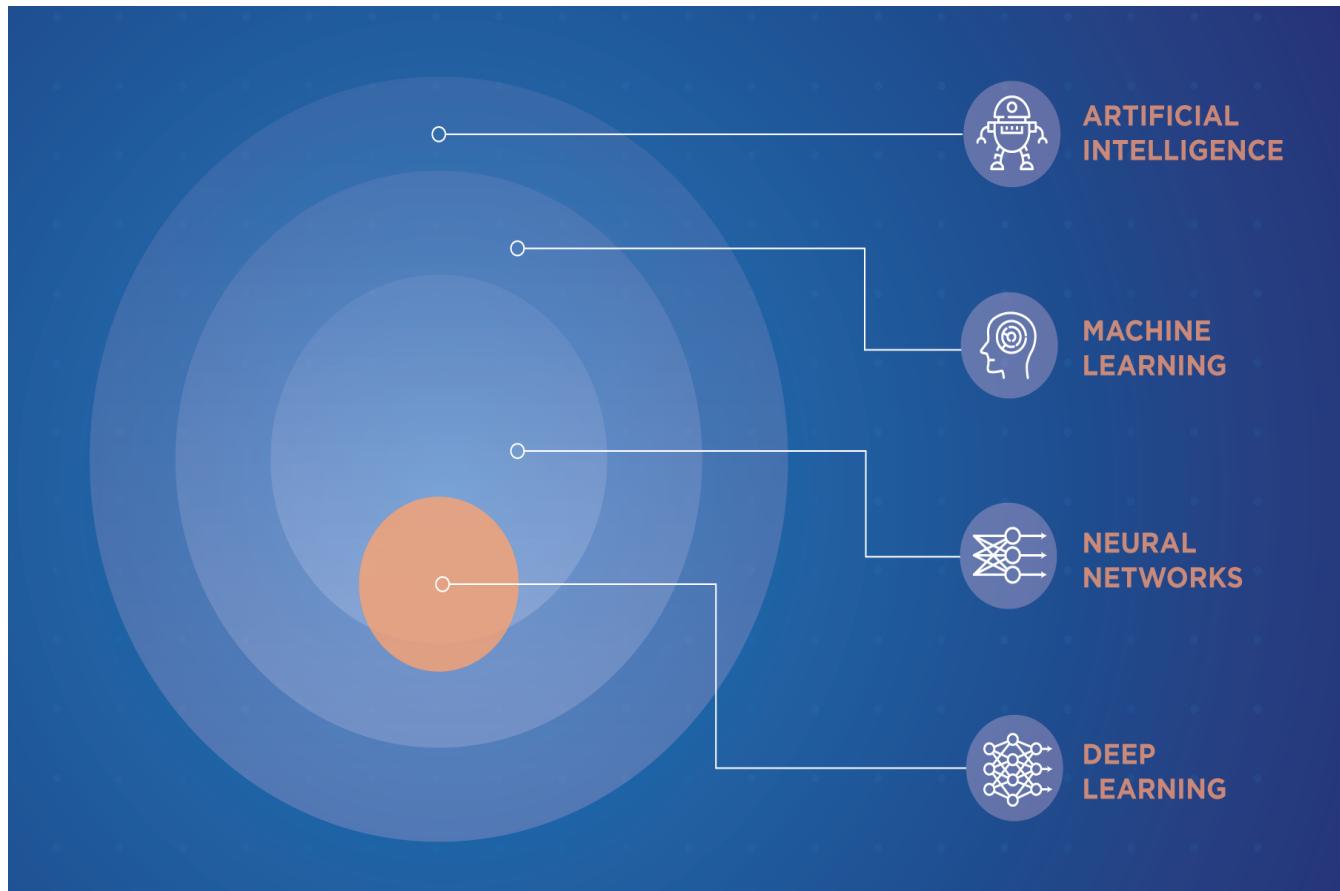


Table: Hours of study per week against score

Hours Studied	Result
10	A
15	A+
13	A+
11	A
6	A-
5	B+
7	A-
8	?

Table: ... score

hours_studied	result_in_c	result
10	A+	A
15	A+	A+
13	A+	A+
11	A+	A
6	B	A-
5	A-	B+
7	C	A-
8	A+	?

Table: ... score

hours_studied	result_in_c	distance_from_home	result
10	A+	1km	A
15	A+	500m	A+
13	A+	1km	A+
11	A+	3km	A
6	B	2km	A-
5	A-	8km	B+
7	C	7km	A-
8	A+	500m	B

CAT



DOG



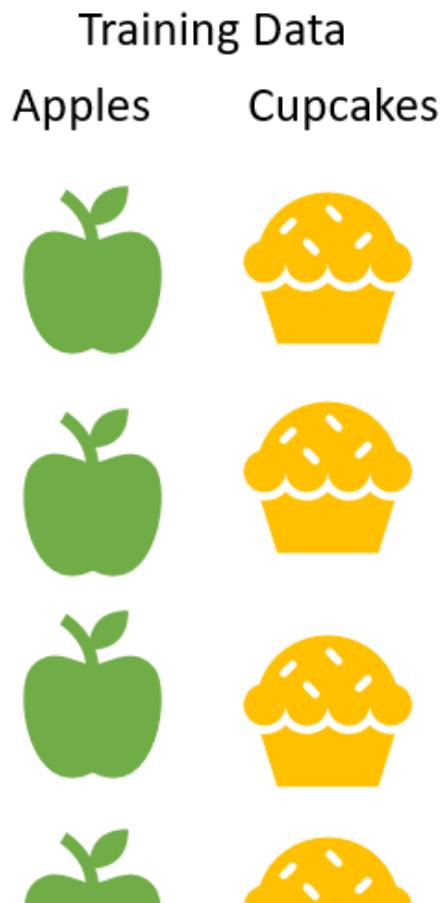
What We See



What the computer see

How to Teach a Computer

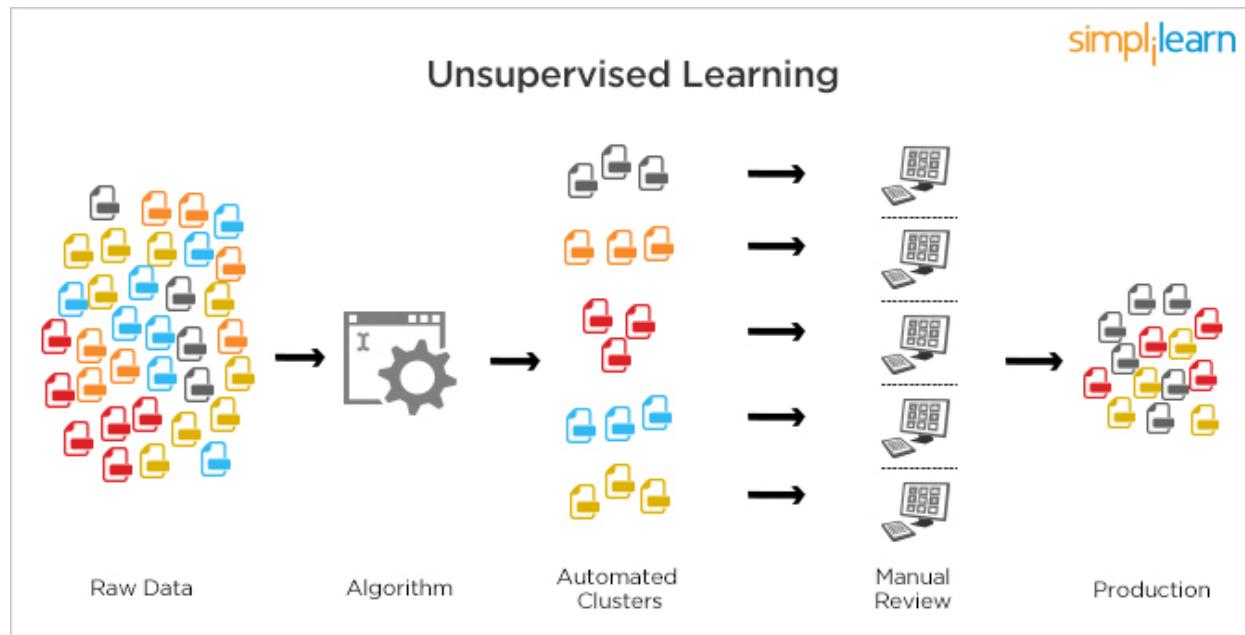
Supervised Learning



Machine
Learning Model



Unsupervised Learning



A little bit about deep learning

What Future Holds?

GPT-3

175 billion parameters

355 years to train on V100

OpenAI

A Trillion Parameter model
- GOOGLE

paper: switch transformers ...

Does future look scary?

How do I get started with learning them?

Tools and frameworks

Python

1. Numpy
2. Pandas
3. Scikit-learn
4. OpenCV
5. Tensorflow
6. PyTorch
7. Keras

Any Question?

How did I do?

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<https://github.com/mehedi-shafi>