



# **Introduction to Artificial Intelligence**



1. About the Course



2. What is AI



3. Applications of AI



4. Types of AI



5. How AI Works

# Introduction to Artificial Intelligence



# **1. About the Course**

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## **2. What is AI**



## **3. Applications of AI**



## **4. Types of AI**



## **5. How AI Works**

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# **Introduction to Artificial Intelligence**



# 1. About the Course

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## About ME

- Ph.D. Student of Computer Science
- AI specialist and Researcher
- I will represent how to use AI in your life!



# 1. About the Course

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## Learning Goals

- Basic and Advanced concepts of AI
- Different types of AI
- How to train an AI
- Future of AI and Ethics
- Better Python programming
- How to think like an Algorithm expert.
- Create our own chatbot
- Create our own voice assistant (Like Alexa)
- Maybe more ... it depends on you!



# 1. About the Course

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What do you need to have?

- A Laptop or a desktop!
- Basic Python and programming

What do we use for programming?

- Google Colab
- PyCharm (Recommended)
- Don't worry, I will walk you through both.



# **1. About the Course**

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## **2. What is AI**



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4. Types of AI



5. How AI Works

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3. Applications of AI



4. Types of AI



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# Introduction to Artificial Intelligence



## 2. What is AI

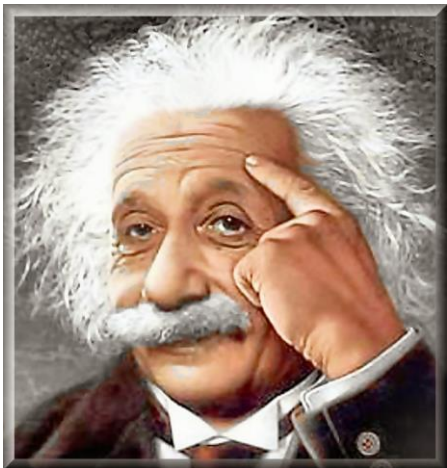
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Artificial Intelligence



## 2. What is AI

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Artificial Intelligence



Ability to learn



## 2. What is AI

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Artificial **Intelligence**



## 2. What is AI

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Artificial **Intelligence**

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## 2. What is AI

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# Artificial Intelligence



We make Them!



## 2. What is AI

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**Why?**

### **Artificial Intelligence**

- Makes our lives **easier, faster**, and more **efficient**!
- We are using them and will use them in almost everything in the future!
- The future is about multidisciplinary fields, and AI will be in every one of them.



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---



3. Applications of AI



4. Types of AI



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1. About the Course



2. What is AI



3. Applications of AI



4. Types of AI



5. How AI Works

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2. What is AI



**3. Applications of AI**

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4. Types of AI



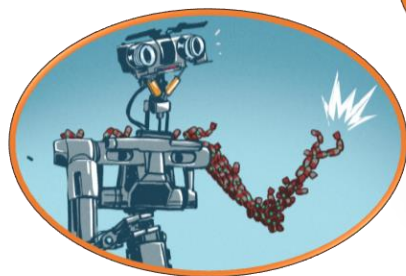
5. How AI Works

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# Introduction to Artificial Intelligence



# 3. Applications of AI





1. About the Course



2. What is AI



**3. Applications of AI**

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4. Types of AI



5. How AI Works

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1. About the Course



2. What is AI



3. Applications of AI



4. Types of AI



5. How AI Works

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2. What is AI



3. Applications of AI



**4. Types of AI**

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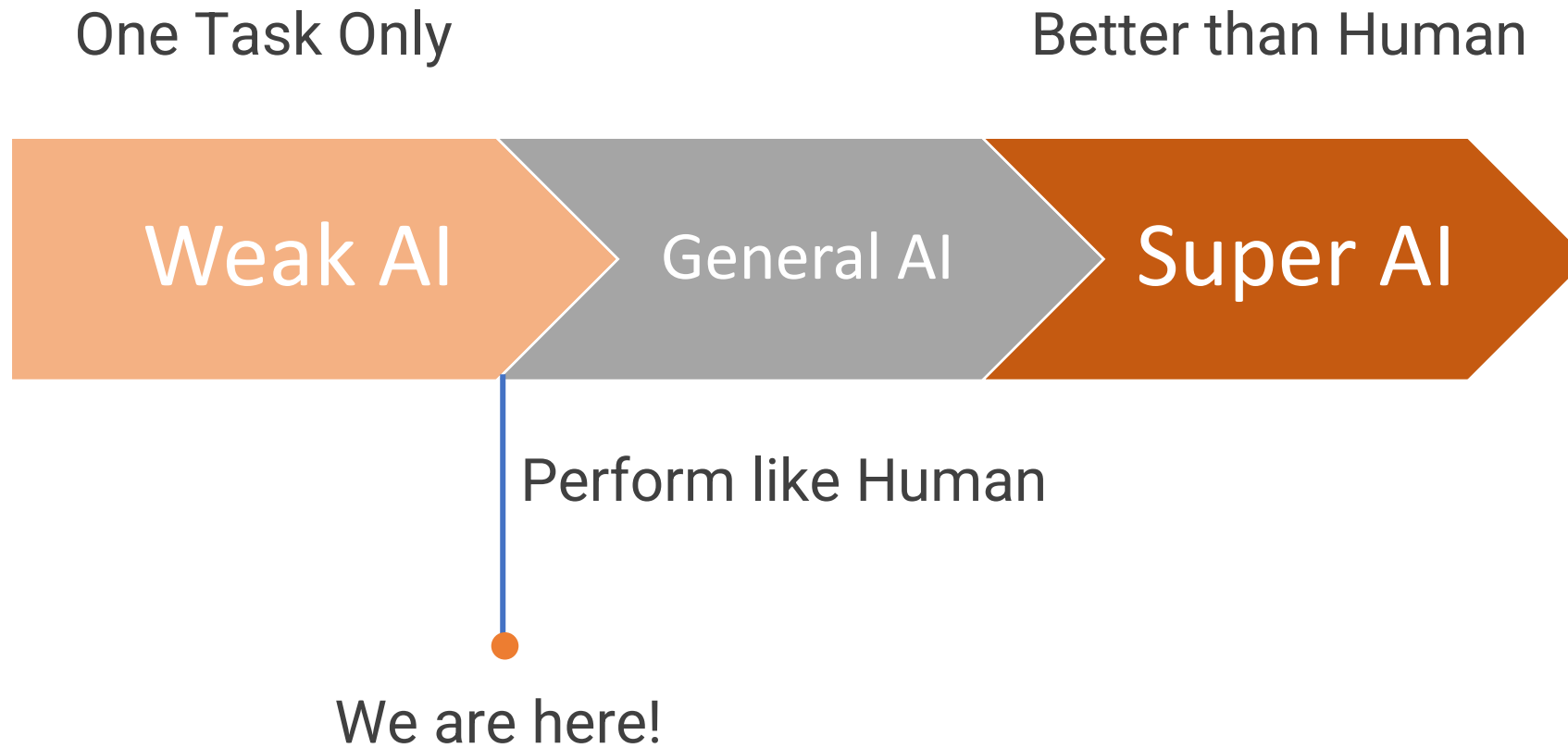
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## Introduction to Artificial Intelligence



## 4. Types of AI

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2. What is AI



3. Applications of AI



**4. Types of AI**

---



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1. About the Course



2. What is AI



3. Applications of AI



4. Types of AI



5. How AI Works

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1. About the Course



2. What is AI



3. Applications of AI



4. Types of AI



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# Introduction to Artificial Intelligence



## 5. How AI Works

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### 1- Rule-base



**Rule:**

If he covers his face, he is a Thief!



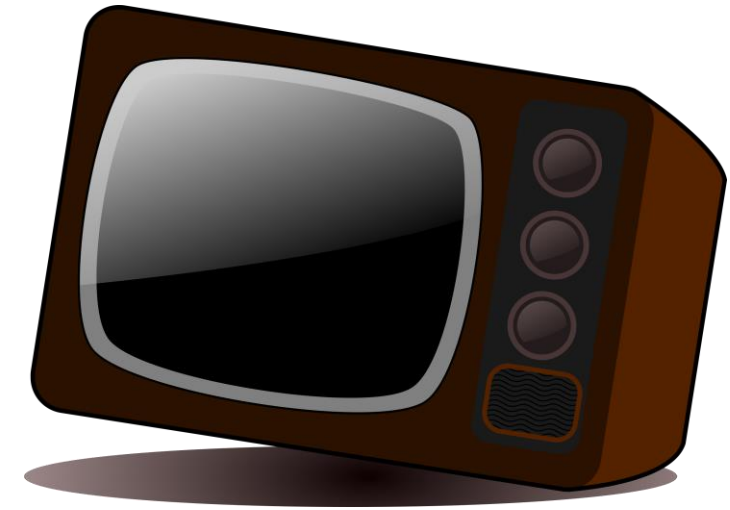


## 5. How AI Works

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1- Rule-base

2- Machine Learning



Look at the difference in :

- Mask
- Face expression
- Behavior
- What are they carrying?

I'm giving you the **hints**  
But create your own rules



## 5. How AI Works

1- Rule-base

2- Machine Learning



Got the rules?

Time for the **EXAM**





## 5. How AI Works

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1- Rule-base

2- Machine Learning

3- Deep Learning



Look at the difference in :

- Rule-based
- Machine Learning
- Deep Learning
- What are they carrying?

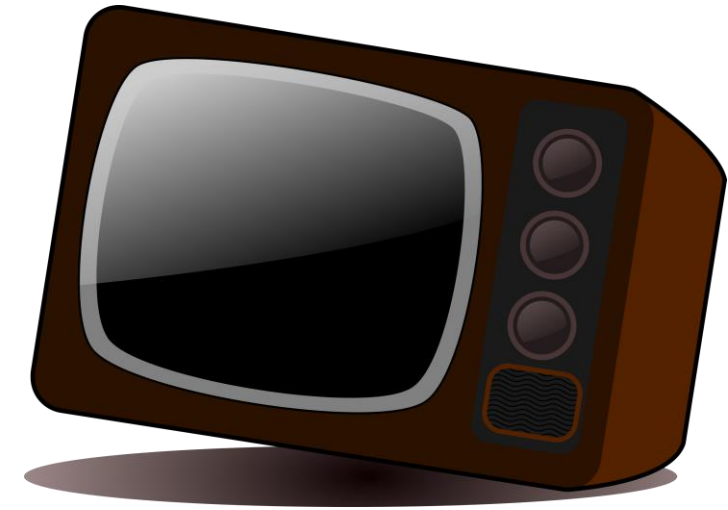
I'm giving you the rules  
But create your own rules



# 5. How AI Works

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- 1- Rule-base
- 2- Machine Learning
- 3- Deep Learning



How??

Create your own rules!





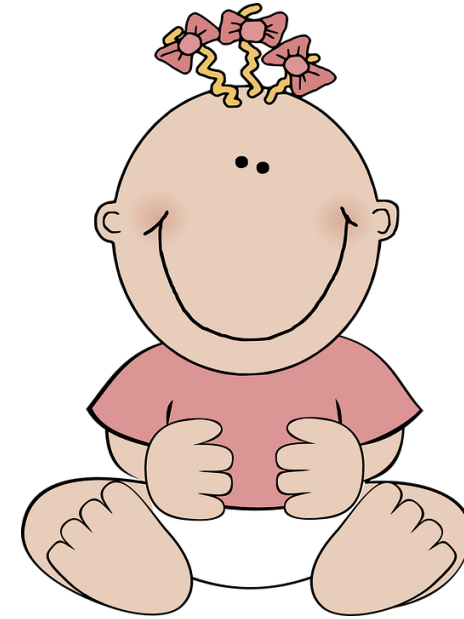
# 5. How AI Works

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1- Rule-base

2- Machine Learning

3- Deep Learning







## 5. How AI Works

- 1- Rule-base
- 2- Machine Learning
- 3- Deep Learning



Got the rules?

Time for the **EXAM**





## 5. How AI Works

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- 1- Rule-base
- 2- Machine Learning
- 3- Deep Learning
- 4- Reinforcement Learning



Bad Dog!





## 5. How AI Works

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- 1- Rule-base
- 2- Machine Learning
- 3- Deep Learning
- 4- Reinforcement Learning

What do we need?

**DATA or Samples**



## 5. How AI Works

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**1- Rule-base**



I give you the exact Rules

**2- Machine Learning**



Many examples  
Hints (what to look)

**3- Deep Learning**



Many Many examples!  
No Hints!

**4- Reinforcement Learning**

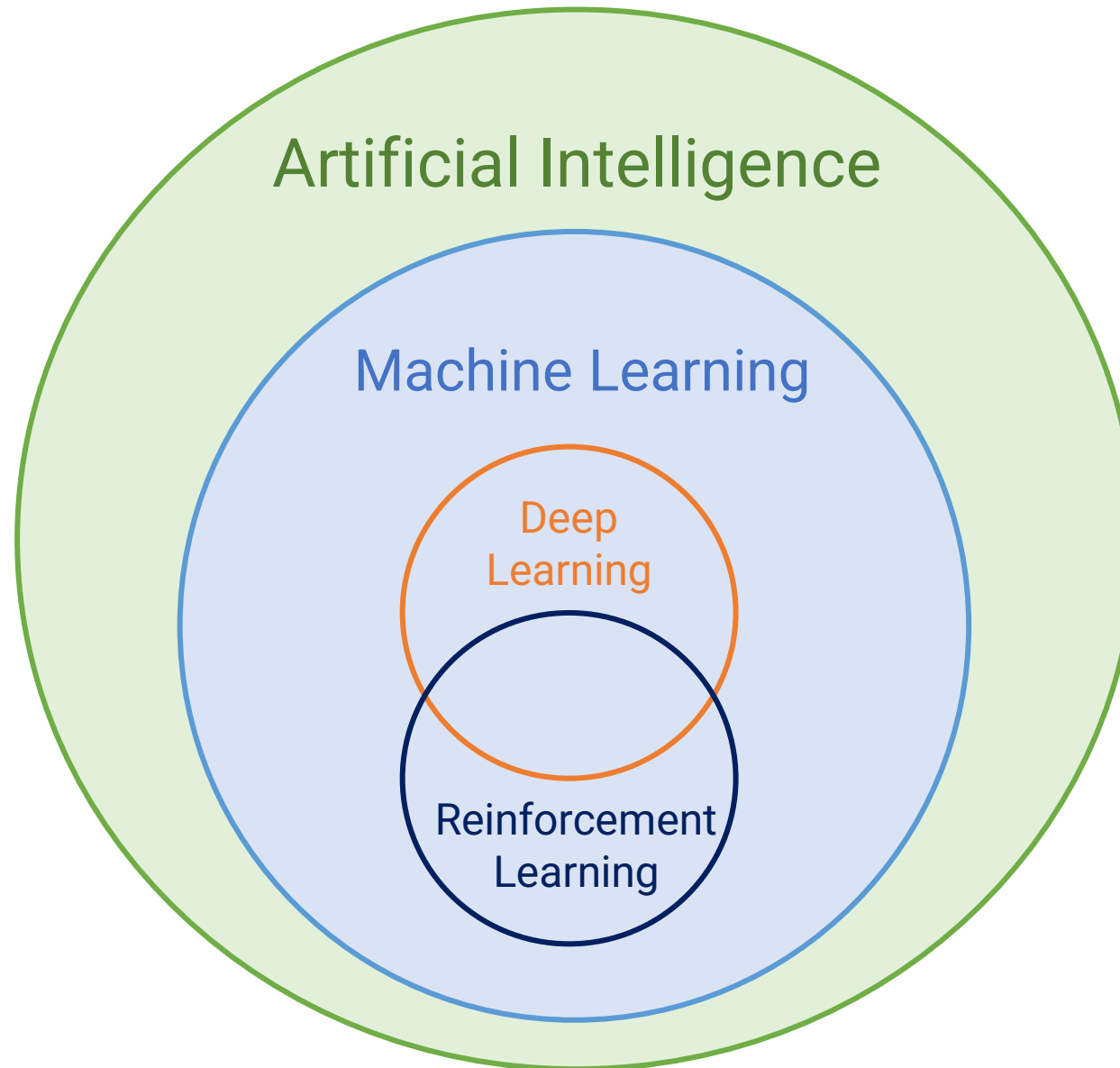


Many Many examples!  
rewarded by doing good!  
penalized by doing bad!



## 5. How AI Works

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## 5. How AI Works

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1- Rule-base

2- Machine Learning

3- Deep Learning

4- Reinforcement Learning



## 5. How AI Works

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**1- Rule-base**

**2- Machine Learning**

**3- Deep Learning**

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# Summary

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- Intelligence is the ability to learn
- AI flows in our lives
- To train an AI:
  - Set the rules (rule base)
  - Let them figure out the rules with hints (Machine Learning)
  - Let them figure out the rules, no hints, let them learn like an infant! (Deep Learning)
  - Reward them or penalize them! (Reinforcement Learning)
- We need many Data and samples to train an AI
- We are just in the beginning!



**Questions?**



# Homework

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- Give an example from the real world. How can we use below methods?
  - Rule base / Machine learning / Deep learning / Reinforcement learning
  - Explain your example as for justification
- Python Programming:
  - Write a **Program** that prints the sum of a given list.
  - Write a **Function** that takes two integers and prints the sum.
  - Let's say you have a list  $X = [3, 4, 8, 20, 12, 35, 16]$ 
    - Write a program that prints Odd elements of the X