# Artificial Intelligence
# and
# Data Science

# ChatGPT

- A trained model which interacts in a conversational way.

- The dialogue format makes it possible for ChatGPT to answer follow up questions, admit its mistakes, challenge incorrect premises, and reject inappropriate requests.

- Go to [chat.openai.com](chat.openai.com)

# Welcome to ChatGPT

Log in with your OpenAI account to continue

Log in     Sign up

# DALL·E 2

- DALL·E 2 is an AI system that can create realistic images and art from a description in natural language.

- Go to [labs.openai.com](labs.openai.com)

# Welcome back

Email address

Continue

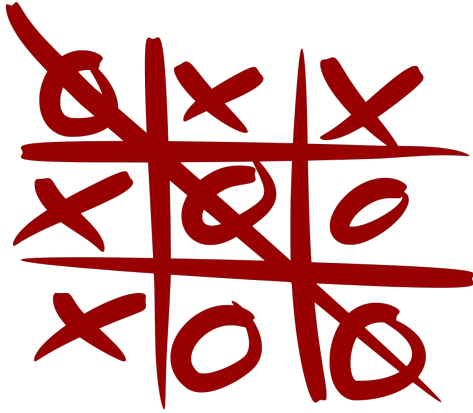Don't have an account? Sign up

OR

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# Tic-Tac-Toe



```
| 0 | 1 | 2 |
| 3 | 4 | 5 |
| 6 | 7 | 8 |
X makes a move to square 6
|   |   |   |
|   |   |   |
| X |   |   |

O's turn. Input move (0-8): 4
O makes a move to square 4
|   |   |   |
|   | O |   |
| X |   |   |

X makes a move to square 0
| X |   |   |
|   | O |   |
| X |   |   |

O's turn. Input move (0-8): _
```

1. The AI analyzes the game state to make strategic moves.
2. The AI places its symbol ('X') on the chosen cell, aiming to win or block the opponent.

## Tic-Tac-Toe Rules

- Objective: Get three of your symbols ('X' or 'O') in a row, horizontally, vertically, or diagonally.

- Turns: Players take turns placing their symbol on an empty cell.

- Win Condition: The game ends when a player achieves three symbols in a row or if all cells are filled without a winner, it's a draw.

# DeepFace: Emotion Detection

1. Check if Python is installed on your system (python --version)

```
C:\Users\ASUS>python --version
Python 3.10.8
```

2. Check if deepface is installed on your system (pip show deepface)

```
C:\Users\ASUS>pip show deepface
Name: deepface
Version: 0.0.78
Summary: A Lightweight Face Recognition and Facial Attribute Analysis Framework (Age, Gender, Emotion, Race) for Python
Home-page: https://github.com/serengil/deepface
Author: Sefik Ilkin Serengil
Author-email: serengil@gmail.com
License: UNKNOWN
Location: c:\users\asus\appdata\local\programs\python\python310\lib\site-packages
Requires: fire, Flask, gdown, keras, mtcnn, numpy, opencv-python, pandas, Pillow, retina-face, tensorflow, tqdm
Required-by:
```

3. If DeepFace is not installed (pip install deepface)

Wait for the installation to be done

4. Go to 'this person does not exist' website & download any image with file name 'test.jpg'

5. Open any Python IDE, ex: Jupyter Notebook, PyCharm

6. Type the python code:

```python
from deepface import DeepFace
result = DeepFace.analyze(img_path = "test.jpg", actions = ["emotion"])
print(max(result[0]['emotion'].items(), key=lambda x: x[1]))
```

```
In [1]:   1  from deepface import DeepFace

In [3]:   1  result = DeepFace.analyze(img_path = "test.jpg", actions = ["emotion"])
          Action: emotion: 100%|████████████████████████████████| 1/1 [00:00<00:00,  1.65it/s]

In [16]:  1  max(result[0]['emotion'].items(), key=lambda x: x[1])
Out[16]:  ('neutral', 72.63409495353699)
```

# Data Visualizations

1. A day in the life of Americans
(https://flowingdata.com/2015/12/15/a-day-in-the-life-of-americans)
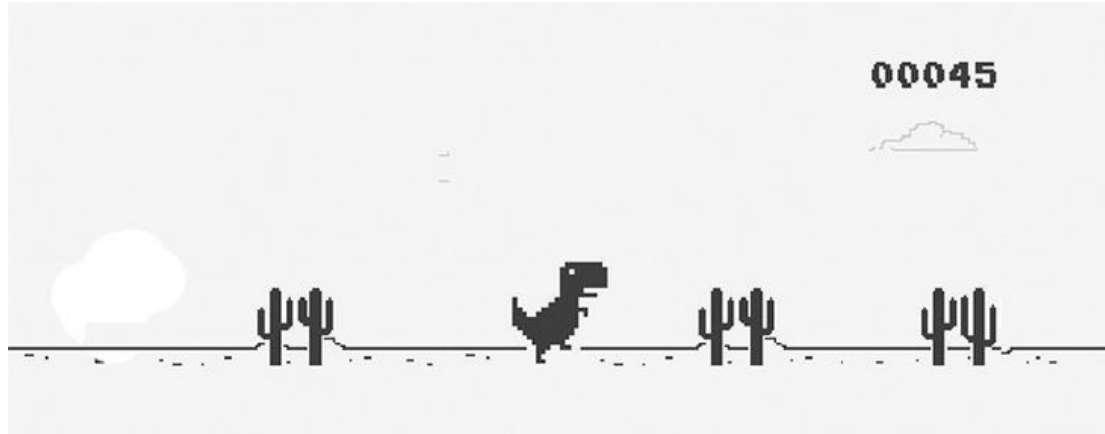
2. Human Terrain
(https://pudding.cool/2018/10/city_3d)

# A.I Games

*Why we need A.I games:*

- ○ AI enhances NPCs, making them more realistic and responsive.
- ○ AI personalizes gameplay based on player behavior.
- ○ AI streamlines game development processes.
- ○ AI brings realism and challenge to games.

- ● Dino Game



1. The AI system uses computer vision to recognize hand gestures in real-time.
2. Based on the recognized gestures, the AI controls the actions of the Dino character in the game.

## **Dino Game Rules**

- ○ Objective: Safely guide the Dino by jumping over cacti and dodging Pterodactylus using hand gestures.
- ○ Hand Gestures: Open hand to run, closed hand to jump.
- ○ Win Condition: Score 1000 points to become the winner.

- Rock Paper Scissor
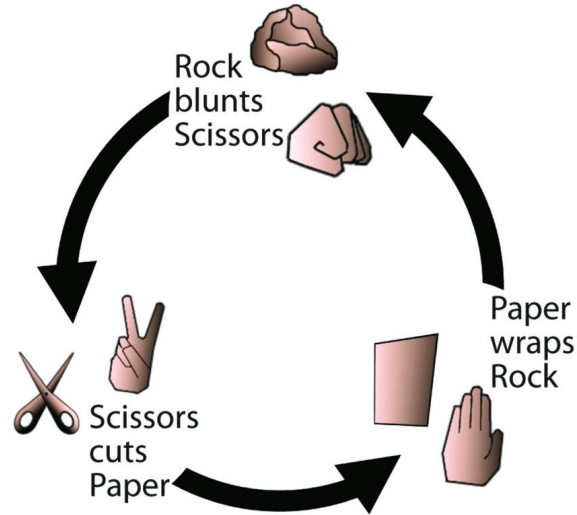


1. The AI recognizes the player's hand gesture (Rock, Paper, or Scissors) using image recognition.
2. Based on the gesture, the AI selects its own hand gesture and determines the round outcome according to the game rules.

## Rock Paper Scissor Rule

- Objective: Defeat the AI opponent by choosing the winning hand gesture (Rock, Paper, or Scissors).
- Rules: Rock beats Scissors, Paper beats Rock, and Scissors beats Paper. Draws occur with the same hand.
- Gameplay: Show your hand gesture to the camera within the designated box and compete against the AI.

# Working with Data

1. Go to Wikipedia and get URL for a table

2. Use pandas API for getting tables from URL: pandas.read_html()

3. Take the required tables to variables

4. Find the length of each variable: len(*table_name*)

5. Calculate the sum of all lengths of variables

# Thank You