D.Y PATIL COLLEGE OF ENGINEERING AKURDI PUNE – 44

DEPARTMENT OF COMPUTER ENGINEERING

LABORATORY PRACTICE – II

AI MINI PROJECT

HOSPITAL AND MEDICAL FACILITIES

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What is AI ?

AI, or artificial intelligence, refers to the ability of computers and machines to mimic human intelligence and cognitive processes, such as learning, problem-solving, and decision-making. It involves creating algorithms and models that can analyze and interpret complex data, recognize patterns and trends, and make predictions based on that data.

Ai is used in a variety of applications, including chatbots, image and speech recognition, self-driving cars, and personalized recommendations. While AI has the potential to revolutionize many industries and improve our lives in numerous ways, it also raises ethical and societal concerns around issues such as privacy, bias, and job displacement.

Importance of AI in Information Management.

Artificial Intelligence (AI) has become increasingly important in information management due to its ability to analyze and interpret vast amounts of data in real-time, making it an essential tool for decision-making processes.

Some of the key benefits of AI in information management include:

1. Data Analysis: AI can help to analyze and interpret large amounts of data, making it easier to identify patterns and insights that might not be apparent to human analysts. This can help organizations to make more informed decisions based on data-driven insights.

2. Process Automation: AI can automate repetitive tasks, such as data entry, report generation, and data cleaning, allowing organizations to free up resources and focus on more critical tasks.

3. Personalization: AI can help to personalize the customer experience by analyzing customer data and preferences and providing targeted recommendations and content.

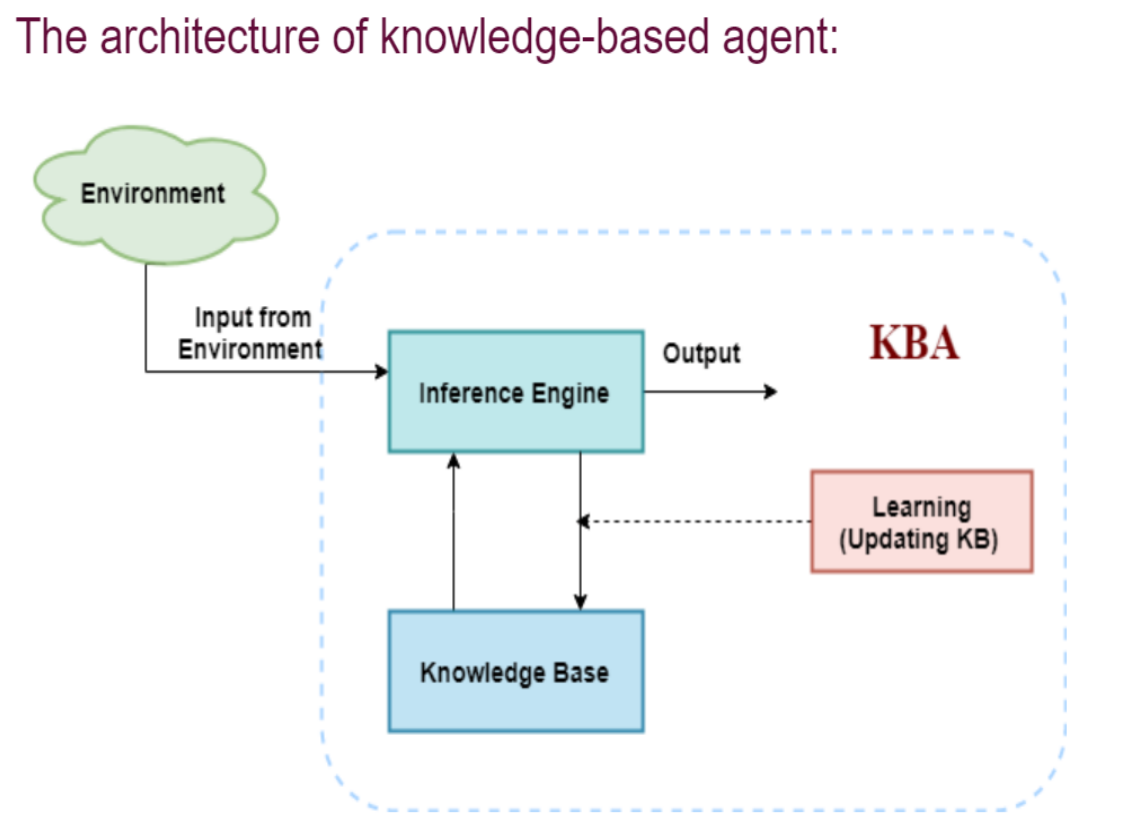
4 .Predictive Analytics: AI can be used to predict future trends and outcomes based on historical data, allowing organizations to make more informed decisions about future strategy and direction.

Knowledge based agents

• An intelligent agent needs **knowledge** about the real world for taking decisions and **reasoning** to act efficiently.
• Knowledge-based agents are those agents who have the capability of **maintaining an internal state of knowledge, reason over that knowledge, update their knowledge after observations and take actions. These agents can represent the world with some formal representation and act intelligently**.

• Knowledge-based agents are composed of two main parts:
- **Knowledge-base and**
- **Inference system**.

Knowledge based agents



Inference means deriving new sentences from old. Inference system allows us to add a new sentence to the knowledge base.

A sentence is a proposition about the world. Inference system applies logical rules to the KB to deduce new information.

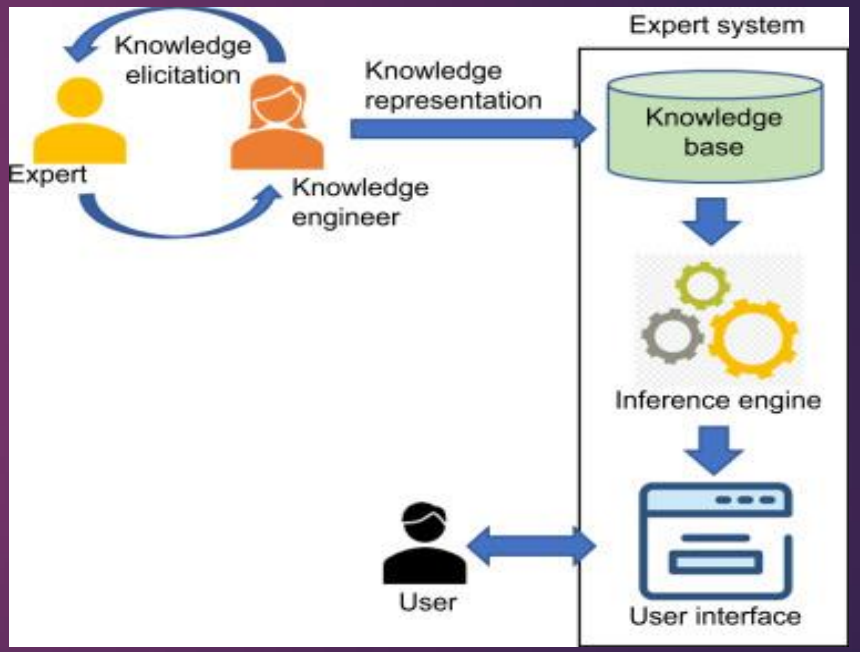
What we are using in this mini-project ?

1. COVID DIAGNOSIS SYSTEM:

KNOWLEDGE BASED COVID EXPERT SYSTEM.

2. DEPRESSION MEASURE SYSTEM :

KNOWLEDGE BASED DEPRESSION MEASURE LEVEL SYSTEM.



Source code:

main.py
~/LP2/MiniProject/temp

```python
#import bodyStats
#import symptomQuestions

print('Welcome to COVID-19 Expert system')
covidSuspicionCounter=0


severity=0
asym=0
oxygen_level=0
temperature_flag=0

bodyStats=['What is your body temperature','What is your oxygen level','How many vaccines have you taken','What is your age']
symptomQuestions=['Do you have cough and cold','Are you able to recognize smell and taste','Are you suffering from sore throat','Are you suffering from headache','Are you suffering from BP/ diabetes','Have you come in a contact of a Covid suspicious person']



for i in range(6):

    print(symptomQuestions[i])
    print()
    ans=input()

    if(i!=1 and ans=='yes'):

        covidSuspicionCounter+=1

    elif(i==1 and ans=='no'):

        covidSuspicionCounter+=1

for i in range(4):

    print(bodyStats[i])
    print()

```

Open

main.py
~/LP2/MiniProject/temp

Save

```
    if(i==0):
        ans=float(input())

        if(ans>=101.0):
            severity+=2
            covidSuspicionCounter+=1
            temperature_flag=1

        elif(ans<101.0 and ans>=99.6):
            severity+=1

        else:
            severity+=0
    if(i==1):
        ans=int(input())

        if(ans>=94):
            severity+=0

        elif(ans<94 and ans>87):
            severity+=1

        else:
            severity+=2
            covidSuspicionCounter+=1
            oxygen_level=1

    if(i==2):
        ans=int(input())

        if(ans==0):
            severity+=2

        elif(ans==1):
            severity+=1

        else:
```

Python 2 | Tab Width: 4 | Ln 6, Col 1 | INS

main.py
~/LP2/MiniProject/temp

```
72
73          else:
74              severity+=0
75
76      if(i==3):
77          ans=int(input())
78
79          if(ans>12 and ans<31):
80              severity+=0
81
82          elif(ans>31 and ans<51):
83              severity+=1
84
85          else:
86              severity+=2
87
88  if(covidSuspicionCounter>3):
89      print('The patient is probably covid positive')
90      print()
91
92      if(severity<3):
93          print('It looks like the symptoms are mild\nhome quarantine')
94
95      elif(severity>=3 and severity<6):
96          print('The patient can get an admission in the general ward')
97
98      else:
99          print('The patient looks critical')
100
101 else:
102     print('It looks like patient is not Covid positive')
103
104 print()
105
106 if(oxygen_level==1):
107     print("Keep monitoring patient's oxygen level")
108
```

Python 2 | Tab Width: 4 | Ln 64, Col 14 | INS

Open

main.py
~/LP2/MiniProject/temp

Save

```
108
109 if(temperature_flag==1):
110     print("Keep monitoring patient's body temperature")
111
112
113
114
115
116 #_____________________
117     # 2
118 print("\033[0;32m\033[1mWelcome to Depression Level Prediction System!")
119
120 def print_options():
121     print("\t(1) Not at all")
122     print("\t(2) Several Days")
123     print("\t(3) More than half the days")
124     print("\t(4) Nearly everyday")
125
126 question_list =["Little interest or pleasure in doing things",
127                 "Feeling down, depressed, or hopeless",
128                 "Trouble falling or staying asleep, or sleeping too much",
129                 "Feeling tired or having little energy",
130                 "Poor appetite or overeating",
131                 "Feeling bad about yourself or that you are a failure or have let yourself or your family down",
132                 "Trouble concentrating on things, such as reading the newspaper or watching television",
133                 "Moving or speaking so slowly that other people could have noticed. Or the opposite being so figety or restless that you have been
    moving around a lot more than usual",
134                 "Thoughts that you would be better off dead, or of hurting yourself"
135                 ]
136 score = 0
137
138 def accept_ans():
139     flag = True
140     while (flag):
141         ans = int(input("Your choice: "))
142         if(ans == 1 or ans==2 or ans == 3 or ans ==4):
143             flag = False
```

Python 2 | Tab Width: 4 | Ln 94, Col 1 | INS

Open

main.py
~/LP2/MiniProject/temp

Save

```
    flag = True
    while (flag):
        ans = int(input("Your choice: "))
        if(ans == 1 or ans==2 or ans == 3 or ans ==4):
            flag = False
            # print(ans-1)
            return (ans-1)
        else:
            print("\033[0;31mEnter a valid option!\033[1;37m")

def find_results(score):
    print("\n\033[4mSCORE: ", score)
    print("Depression severity: ", end="")
    if(score in range(1,5)):
        print("Minimal Depression")
    elif(score in range(5,10)):
        print("Mild Depression")
    elif(score in range(10,15)):
        print("Moderate Depression")
    elif(score in range(15,20)):
        print("Moderately Severe Depression")
    elif(score in range(20,28)):
        print("Severe Depression")
    else:
        print("No Depression")
    print("\033[0m")


def PHQ9test(bodyStats, score):
    for i in range(len(bodyStats)):
        print("\n" ,i+1,". \033[1;34m", bodyStats[i], "\033[1;37m")
        print_options()
        score += accept_ans()
        # print("score= ", score)
    find_results(score)

PHQ9test(bodyStats=question_list, score=score)
```

Python 2 | Tab Width: 4 | Ln 94, Col 1 | INS

Output Screenshots :

```
PS C:\Users\Ashutosh Raj Gupta\Desktop\sem6 Laboratory\LP2\LP2-Assignments\AI mini>python -u "c:\
sh Raj Gupta\Desktop\sem6 Laboratory\LP2\LP2-Assignments\AI mini\covid.py"
Welcome to COVID-19 Expert System!!
Do you have cough and cold

yes
Are you able to recognize smell and taste

no
Are you suffering from sore throat

yes
Are you suffering from headache

yes
Are you suffering from BP/ diabetes

yes
Have you come in a contact of a Covid suspicious person

yes
What is your body temparature

103
What is your oxygen level

99
How many vaccines have you taken

0
What is your age

45
```

```
The patient is probably covid positive

The patient can get an admission in the general ward

Keep monitoring patient's body temperature
```

```
Welcome to Depression Level Prediction System!

 1 .  Little interest or pleasure in doing things
        (1) Not at all
        (2) Several Days
        (3) More than half the days
        (4) Nearly everyday
Your choice: 4

 2 .  Feeling down, depressed, or hopeless
        (1) Not at all
        (2) Several Days
        (3) More than half the days
        (4) Nearly everyday
Your choice: 1

 3 .  Trouble falling or staying asleep, or sleeping too much
        (1) Not at all
        (2) Several Days
        (3) More than half the days
        (4) Nearly everyday
Your choice: 1

 4 .  Feeling tired or having little energy
        (1) Not at all
        (2) Several Days
        (3) More than half the days
        (4) Nearly everyday
Your choice: 1

 5 .  Poor appetite or overeating
        (1) Not at all
        (2) Several Days
        (3) More than half the days
        (4) Nearly everyday
Your choice: 1

 6 .  Feeling bad about yourself or that you are a failure or have let yourself or your family down
        (1) Not at all
        (2) Several Days
        (3) More than half the days
        (4) Nearly everyday
Your choice: 1

 7 .  Trouble concentrating on things, such as reading the newspaper or watching television
        (1) Not at all
        (2) Several Days
        (3) More than half the days
        (4) Nearly everyday
Your choice: 2

 8 .  Moving or speaking so slowly that other people could have noticed. Or the opposite being so figety or r
estless that you have been moving around a lot more than usual
        (1) Not at all
        (2) Several Days
        (3) More than half the days
        (4) Nearly everyday
Your choice: 2

 9 .  Thoughts that you would be better off dead, or of hurting yourself
        (1) Not at all
        (2) Several Days
        (3) More than half the days
        (4) Nearly everyday
Your choice: 1

SCORE:  5
Depression Severity: Mild Depression
```

THANK YOU !