

Date:	22-05-2020	Name:	POOJA K S
Course:	TCS ION CAREER EDGE	USN:	4AL17EC070
Topic:	Understand artificial intelligence(AI)-Part 1, Understand artificial intelligence(AI)-Part 2 and Assessment	Semester and section	6 <sup>th</sup> sem B-sec
Github repository:	pooja-shivanna		

Indian Institute of Technology, Kharagpur

## Applications

- Computer vision
- Image Recognition
- Robotics
- Language processing

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## Practical Impact of AI

- AI components are embedded in numerous devices e.g. copy machines.
- AI systems are in everyday use
  - detecting credit card fraud
  - configuring products
  - aiding complex planning tasks
  - advising physicians.
- Intelligent tutoring systems provide students with personalized attention.

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## Applications

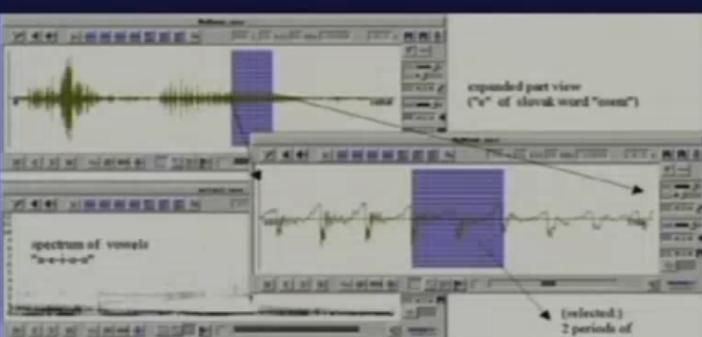


The diagram illustrates a knowledge management system architecture. It starts with an **Information supplier** who provides **Documents** to a **Knowledge base**. The **Knowledge base** feeds into **Text mining**, **Analysis and Presentation**, and a **Search engine**. The **Search engine** interacts with an **Information user** via a **Request** and a **Response**. Other applications shown include **Machine translation, Summary making** and **Text search, Multi-language search**.

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## Applications



The screenshot shows a speech processing application window. It displays two waveforms: a raw audio signal and a spectrum of vowels. Annotations highlight specific features: "expanded part view ('e' of vowel word 'man')" and "Selected: 2 periods of vowel 'e'".

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Speech processing

TCS iON Digital Learning Hub poola

[g41.tcsion.com/LX/contents/content\\_home?content\\_player=true&org\\_id=1016&TargetOrgId=3876&usrorgid=1016&LaunchFrom=iHUB&User-Agent=Computer...](http://g41.tcsion.com/LX/contents/content_home?content_player=true&org_id=1016&TargetOrgId=3876&usrorgid=1016&LaunchFrom=iHUB&User-Agent=Computer)

**Career Edge - Knockdown the Lockdown - Batch 01**

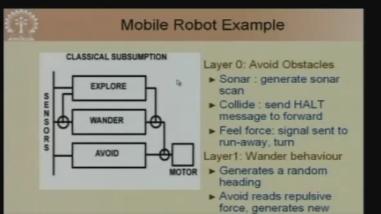
TABLE OF CONTENTS

- Etiquette
  - Learn Corporate Telephone Etiquette
- DAY 11: Understand Accounting Fundamentals
- DAY 12: Gain Foundational Skills in IT
- DAY 13: Understand Artificial Intelligence (AI) - Part 1
  - Lesson - Understand Artificial Intelligence (AI) - Part 1
- DAY 14: Understand Artificial Intelligence (AI) - Part 2
  - Lesson - Understand Artificial Intelligence (AI) - Part 2
- DAY 15: Assessment
- Final Assessment
- Feedback

Sub Unit- Lesson - Understand Artificial Intelligence (AI) - Part 1

**Mobile Robot Example**

CLASSICAL SUBSUMPTION



Layer 0: Avoid Obstacles
 

- Sonar : generate sonar scan
- Collide : send HALT message to forward
- Feel force : signal sent to run away, turn

 Layer 1: Wander behaviour
 

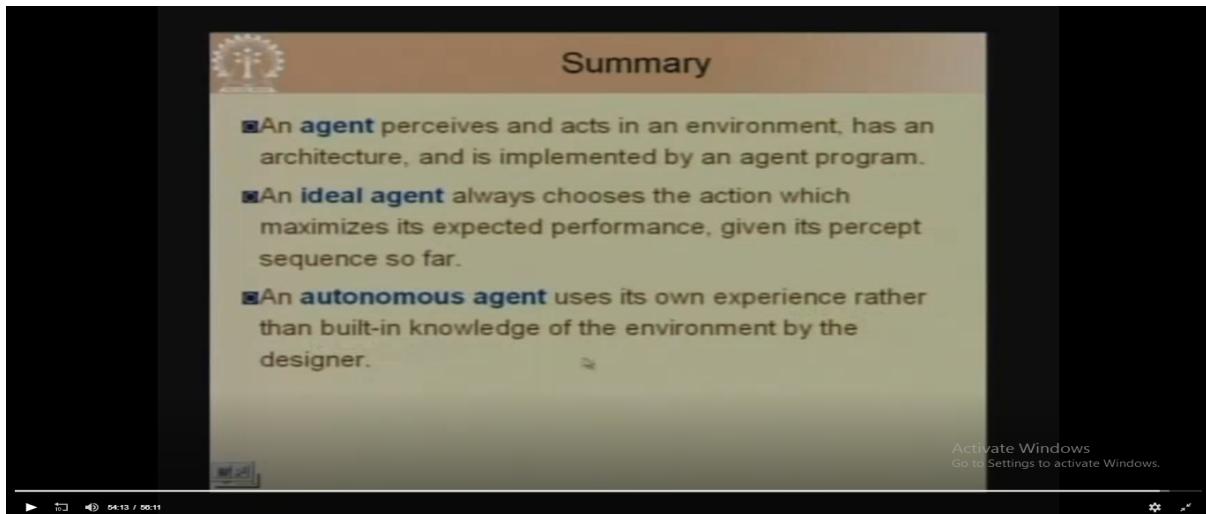
- Generates a random heading
- Avoids repulsive force, generates new heading, feeds to turn and forward

Quality:  High  Medium  Low

Playback speed:

209 Comment(s)

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The screenshot shows a web browser window for the 'TCS iON Digital Learning Hub'. The page title is 'Digital Learning - Career Edge -'. The main content area displays a course summary for 'Career Edge - Knockdown the Lockdown : Batch 0'. The summary table includes:

Total Marks	Pass Marks	Attempts Taken	Duration	Start Time	View Assessment Analysis	Already cleared assessment.
30.0	18.0	02	30 Mins	15 May 2020 12:00 AM TO 14 Jul 2020 12:00 AM	At the End of Assessment	

Below the summary is a table titled 'My Attempts' showing two entries:

Attempted On	Attempted Duration (Submission Time)	Marks Obtained	Status	Action
22 May 2020 12:16 PM	0:48:39 Hrs(01:05 PM)	19.0/30.0	Pass	-
22 May 2020 11:18 AM	0:47:6 Hrs(12:05 PM)	17.0/30.0	Fail	-

The left sidebar contains a 'TABLE OF CONTENTS' with several sections and sub-sections, each marked with a green checkmark. The sections include 'Instructions', 'DAY 1: Communicate to Impress', 'DAY 2: Deliver Presentations with Impact', and 'DAY 3: Develop soft skills for the Workplace'. The bottom of the screen shows a Windows taskbar with various icons and a system status bar indicating '1:09 PM 5/22/2020'.

22/05/2020

Day -13 - unit

understand artificial

Intelligence (AI) - Part 1

• Introduction

\* On taking this lesson you should be

• Familiar with the different way of defining artificial intelligence

• understand what are the different components of intelligent behaviours

\* AI

\* is concerned with the design of intelligence in an artificial device

\* Term coined by McCarthy in 1956

The turing test

HUMAN

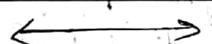
types in  
questions

receives

answers

on screen

COMPUTER /



HUMAN

processes

questions

returns

answers

Both 'claim' to be the (intelligent)  
human

The turing test : result

If the interrogator cannot reliably distinguish the human from the Computer

then the computer does possess (certified) intelligence

what's easy and what's hard:

- It has been easier to mechanize many of the high-level tasks we usually associate with "intelligence" in people
  - \* symbolic integration
  - \* proving theorems
  - \* playing chess
  - \* medical diagnosis

In intelligent behaviour

- perception
- reasoning
- learning
- understanding language

• Mars Rover

### AI Systems

- Computer Vision: Face Recognition
- Robotic : autonomous (mostly) automobile
- Natural language processing : simple machine translation
- Expert systems: medical diagnosis in a narrow domain
- Spoken language
- planning and scheduling
- Learning

- Game

## Foundations of AI

- Philosophy
- Mathematics
- Economics
- Psychology
- Biology
- Computer Engineering
- Linguistics

## Day 14 - unit understand Artificial Intelligence (AI) - part 2

### Agents

- Humans
- Robots

### Type of Agents

- Software
- Expert Systems
- Autonomous Spacecraft
- Intelligent buildings

### percept based agent

- Efficient
- No internal representation for reasoning inference

- \* No Strategic planning learning
- ~ Percept-based agents are not good for multiple opposing goals

Day - 15 - Assessment

## TCS IOS-CAREER EDGE CERTIFICATE:



TATA CONSULTANCY SERVICES

*This is to certify that  
pooja shivanna  
has successfully completed  
**Career Edge - Knockdown the Lockdown**  
online course offered by TCS iON*

**Start Date:** 15 May 2020 | **End Date:** 22 May 2020

### Topics:

- Communication Skills ■ Presentation Skills ■ Soft Skills ■ Career Guidance Framework ■ Resume Writing
- Group Discussion Skills ■ Interview Skills ■ Business Etiquette ■ Effective Email Writing ■ Telephone Etiquette
- Accounting Fundamentals ■ IT Foundational Skills ■ Overview of Artificial Intelligence\* (Source: NPTEL)



*Mehul Mehta*  
\_\_\_\_\_  
Mehul Mehta  
Global Delivery Head, TCS iON

<b>Date:</b>	22-05-2020	<b>Name:</b>	POOJA K S
<b>Course:</b>	Python programming	<b>USN:</b>	4AL17EC070
<b>Topic:</b>	<b>Application 2:Create webmaps with python and folium</b>	<b>Semester and section:</b>	<b>6<sup>th</sup> sem and B sec</b>

## HTML on Popups

Note that if you want to have stylized text (bold, different fonts, etc) in the popup window you can use HTML. Here's an example:

```

1 import folium
2 import pandas
3
4 data = pandas.read_csv("Volcanoes.txt")
5 lat = list(data["LAT"])
6 lon = list(data["LON"])
7 elev = list(data["ELEV"])
8
9 html = """<h4>Volcano information:</h4>
10 Height: %s m
11 """
12
13 map = folium.Map(location=[38.58, -99.09], zoom_start=5, tiles="Mapt
14 fg = folium.FeatureGroup(name = "My Map")
15
16 for lt, ln, el in zip(lat, lon, elev):
17     iframe = folium.IFrame(html=html % str(el), width=200, height=100)
18     fg.add_child(folium.Marker(location=[lt, ln], popup=folium.Popup(
19
20
21 map.add_child(fg)
22 map.save("Map_html_popup_simple.html")

```

You can even put links in the popup window. For example, the code below will produce a popup window with the name of the volcano as a link which does a Google search for that particular



140. Choropleth Map

```
Atom File Edit View Selection Find Packages Window Help
map1.py -- ~/Dropbox/pm1/mapping
mapping
Map1.html
map1.py
Volcanoes.txt
world.json
map1.py
4 data = pandas.read_csv("Volcanoes.txt")
5 lat = list(data["LAT"])
6 lon = list(data["LON"])
7 elev = list(data["ELEV"])
8
9 def color_producer(elevation):
10     if elevation < 1000:
11         return 'green'
12     elif 1000 <= elevation < 3000:
13         return 'orange'
14     else:
15         return 'red'
16 map = folium.Map(location=[38.58, -99.09], zoom_start=6, tiles="Mapbox Bright")
17
18 fg = folium.FeatureGroup(name="My Map")
19
20 for lt, ln, el in zip(lat, lon, elev):
21     fg.add_child(folium.CircleMarker(location=[lt, ln], radius = 6, popup=str(el)+" m",
22                                     fill_color=color_producer(el), color = 'grey', fill_opacity=0.7))
23
24 fg.add_child(folium.GeoJson(data=open('world.json', 'r', encoding='utf-8-sig'),
25 style_function=lambda x: {'fillColor': 'green' if x['properties']['POP2005'] < 10000000
26 else 'orange' if 10000000 <= x['properties']['POP2005'] < 20000000})
27
28 map.add_child(fg)
29 map.save("Map1.html")
```

Pause

```
>>> lambda x: x**2
<function <lambda> at 0x102488a60>
>>> exit()
Ardis-MBP:mapping mia$ python3 map1.py
```

Ardis-MBP:mapping mia\$

22/05/2020

Day - 5

Application 2: Create webmaps  
with python and Folium

\* web map - How the output will look like

\* The Base map

\* Note

• ~~Set the next to~~

tiles = "mapbox Bright"

instead i.e.

tiles = "Stamen Terrain"

\* Adding points

\* Adding multiple points

\* adding points from files

\* Popup windows on map

\* HTML on popups

\* Color Points

\* Style Points

\* Solution

\* Geopandas Data

\* Adding a Geopandas polygon layer

\* Choropleth map

\* Layer control panel