Solution Student Handbook - Chapter 4

Objective Type Questions

(1) Please choose the correct option in the questions below:
(1) Data Science can help with:
(a) Speech Recognition
(b) Digital Advertising
(c) All of the above

(2) Which of the following is a goal of Artificial Intelligence?
(a) Logical Reasoning
(b) Knowledge Representation
(c) Planning and Navigation
(d) All of the above.

(3) Which of the following is a use case of data science?
(a) Facial recognition
(b) Text analytics
(c) Sentiment analysis
(d) All of the above

(4) What does natural language processing help us with?
(a) Text analytics
(b) Video analytics
(c) Image analytics

(5) What technologies are used by chatbots?
(a) Text analytics
(b) Speech recognition
(c) Both above

Standard Questions

Please answer the questions below in no less than 100 words:

(1) How data science is used for speech recognition?
Nowadays you can observe the speech recognition in the smart watches, gaming consoles etc, and has become a part of our daily life. Microsoft Cortana makes use of speech recognition behind the scenes to take the inputs from the user. Many devices which are used in our houses, you may find speech recognition in them too.

(2) Write a use case for analyzing images.
Image recognition is a method where the images are been processed for the people's identification, patterns, logos etc. Nowadays there are certain machine learning tools which helps

the users with facial recognition of the object in the picture. Such tools are capable of scanning and identifying the objects and name them which will be based on the huge database of images. For ex:- Mobiles are the devices which makes use of the computer's vision technology with the combination of camera for obtaining an image resolution. There is a wide range of application which are most helpful to the impaired and interactive advertising. In various government or private organizations, for checking attendances and identifying purposes by using facial recognition. Ai is not only used for identifying faces or finding the objects in an image, but it is also capable of recognizing the special patterns in the images and match them as per the database. The mostly used application related to image analytics is searching of the contents based on the image. Many search engines provide the facilities of uploading images and searching them too.

(3) What are some of the goals of AI?

The goals of the AI are as followed:

a. **Logical Reasoning**: The main objective of AI is to make the computers much capable in regards of performing all the intellectual and difficult tasks in comparison to human being. For ex:- performing the task of solving of logical reasons like switching of fan when its too hot or solving the very big and difficult arithmetic calculation.
b. **Knowledge Representation**: With the help of AI computers are capable of describing an object. Ex:- Describing the car which has violated/ broken the traffic rules and regulations.
c. **Planning and Navigation**: Helps the computers to travel a journey from one point to the another just like a self-driving robot.
d. **Natural Language Processing**: It will help the computer to develop the skill of language understanding and processing. For ex:- a translator on the internet is helpful in translator one language to the other.
e. **Perception**: AI makes the computers potential in terms of communicating with the objects of the real world through the sense which is created by the touch, smell, sound, observation (eyesight).
f. **Emergent Intelligent**: It not only makes the computers intelligent not only by programming but also by capturing AI capabilities. The main aim of this is that the computers must capable of understanding the emotional intelligence, moral reasoning etc.

High Order Thinking Skills (HOTS)

Please answer the questions below in no less than 200 words:

(1) How is text data analyzed?

Text analytics can be termed as the method of gathering the not structured text from different unknown sources and extracting some information from them. It is also used in converting the not structured text into the structured text which can be used in different ways. For analyzing the non – structured text, there are many ways which is later on divided in different technical areas such as Natural Learning Processing (NLP), data mining, and information retrieval. Such type of text analytic technologies are mostly used in accomplishing the four basic tasks which are querying data, data mining, searching data and analyzing data in order to get insights.

(2) What are some of the applications of image recognition?

There is a wide range of application which are most helpful to the impaired and interactive advertising. In various government or private organizations, for checking attendances and identifying purposes by using facial recognition. Ai is not only used for identifying faces or finding the objects in an image, but it is also capable of recognizing the special patterns in the images and match them as per the database. The mostly used application related to image analytics is searching of the contents based on the image. Many search engines provide the facilities of uploading images and searching them too.

Applied Project

Understanding the mood of the speaker can be very useful. Certain keywords can be associated with different sentiments.

- **Example 1:** "The news continues to be gloomy." If you read this sentence you will understand that the sentiment of the speaker is sad.

- **Example 2:** "I was infuriated by his arrogance." This sentence tells you that the sentiment of the speaker is angry.

Discuss with your classmates how text analytics can help us identify the sentiment of the speaker i.e. if the speaker is happy, angry, or sad. It is possible that a sentence may have more than one keywords which highlight the sentiment of the speaker. Provide two examples of such scenario for each of the sentiments discussed above.