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Class : Ty. B.Tech CSE Division : 4 Roll No.: PD 31 Academic Year : 2019 -2020

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Q. No.	1	2	3	4	5	6	7	8	9	10	Total	
Marks/Grade												Name & sign of the faculty Member

(Please start writing assignment/ test from here)

Q.1. Explain applications of artificial intelligence in business and agriculture.

Ans. Application of Artificial Intelligence in Business –

1. Banking and finance –
   many banks use the various applications of artificial intelligence to detect fraudulent activity.

2. Transferring and cross-referencing data; updating files.

3. Retail – online customer support –
   Many websites now offer some form of 'chat' functionality where you can talk to a customer support representative or sales

4. Consumer behavior forecasting and product recommendations.

5. personalized advertising and marketing messaging.

6. customer service via telephone or chatbots.

Application of Artificial intelligence in Agriculture —

The use of AI in agriculture helps the farmer to understand the data insights such as temperature, percipitation, wind speed, and solar radiation.

1. AI provides more efficient ways to produce, harvest and sell essential crops.

2. AI implementation emphasis on checking defective crops and improving the potential for healthy crop production.

3. The growth in AI technology has streghthened agro-based businesses to them more efficienty.

4. AI used in automated machine adjustment in weather forecasting and disease or pest identification.

Q.2 - Explain applications of artificial intelligence in natural language processing (NLP) and robotics.

Ans. Applications of Artificial intelligence in Natural Language processing (NLP) -

1. Machine Translation :-

Machine translation helps to conquer language barriers that we often encounter by translating technical manuals, support content or catalogs at a significantly reduced cost.

2. Automatic Summarization :-

Automatic summarization is especially relevant when used to provide an overview of a news item or blog posts, while avoiding redundancy from multiple sources & maximizing the diversity of content obtained.

3. Sentiment Analysis :-

Companies use natural language processing applications, such as sentiment analysis, to identify opinions and sentiment online to help them understand what customers think about their product and services and overall indicators of their reputation.

4. Text Classification :-

Text classification makes it possible to assign predefined categories to a document and organize it to help you find the information you need or simplify some activities.

Applications of Artificial Intelligence in Robotics :-

1. **Industries** :- Robots are used for handling material, cutting, welding, drilling etc.

2. **Military** :- Autonomous robots can reach inaccessible and hazardous zones during war. A robot named Daksh, developed by DRDO, is in function to destroy objects safely.

3. **Medicine** :- The robots are capable of carrying out hundreds of clinical tests simultaneously, rehabilitating permanently disabled people.

4. **Exploration** :- The robot rock climbers used for space exploration, underwater drones used for ocean exploration are to name a few.

5. **Entertainment** :- Disney's engineers have created hundreds of robots for movie making.

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ASSIGNMENT /
TEST Page No.

Q.3. Explain the different architectures of deep neural networks. How artificial intelligence can be used in computer vision?

Ans. The different architectures of deep neural networks are :

1. Convolutional Neural Networks :-
Convolutional Neural network are quite different from most other networks. They are primarily used for image processing but can also be used for other types of input as audio. A typical use case for CNNs is where you feed the network images and the network classifies the data. CNNs tend to start with an input "scanner" which is not intended to parse all the training data at once.

For example, to input an image of 100×100 pixels, you wouldn't want a layer with 10000 nodes. Rather, you create a scanning input layer of say 10×10 which you feed the first 10×10 pixels of the image. once you passed that input, you feed it the next 10×10 pixels by moving the scanner one pixel to the right. This input data is then fed through convolutional layers instead of normal layers, where not all nodes are connected to all nodes.

2. Recurrent Neural Networks :—

   Recurrent Neural Networks (RNN's) are basically perceptrons; however, unlike perceptrons which are stateless, they have connections between passes, connections through time. RNN's are very powerful, because they combine 2 properties : 1) distributed hidden state that allows them to store a lot of information about the past efficiently; and 2) non-linear dynamics that allows them to update the hidden state in complicated ways. With enough neurons and time, RNN's can compute anything that can be computed by your computer.

3. Perceptrons :—

   Perceptrons are simply computational models of a single neurons. Perceptrons feeds information from the front to the back. Training perceptrons usually requires back-propagation, giving the network paired datasets of inputs and outputs. Inputs are sent into the neurons, processed, and result in an outputs. The error being back propagated is often some variations of the difference between the input and the output. Given that the network has enough hidden neurons, it can theoretically always model the relationship between the input and output - practically their use is a lot more limited but they are popularly combined with other

networks to form new networks.

Use of Artificial Intelligence in computer vision :—

1. Automatic inspection (image based automated inspection), e.g., in manufacturing applications.

2. Assisting humans in identification tasks (to identify object / species using their properties), e.g., a species identification system.

3. Controlling processes (in a way of monitoring robots), e.g., an industrial robot.

4. Detecting events, e.g., for visual surveillance or people counting.

5. Navigation, e.g., by an autonomous vehicle or mobile robot.

6. Organizing information, e.g., for indexing databases of images and image sequences.