**SMP\_ML\_ASSGN\_1**

**Instructions:**

* Attempt all the questions
* For the 1st one you can search the web for the answer and write it down so that you learn more about it
* For the 2,3 and 4 you will need to even explain the answer
* The answers can be written in an word file or a handwritten file
* Send the answer file through the mail to **adithshekhargatty.191me203@nitk.edu.in**
* While submitting don’t forget to mention your name
* The deadline for the assignment submission is **11:00 pm 20th May 2021**
* No submissions will be accepted after the deadline

1. **Describe the differences between Machine Learning, Deep Learning and Artificial Intelligence ( 5 marks)**
2. **Of the following examples, which would you address using an unsupervised learning algorithm? (Multiple correct ans)**

**( 2 marks)**

A)Given email labeled as spam/not spam, learn a spam filter.

B)Given a set of news articles found on the web, group them into sets of articles about the same stories.

C)Given a database of customer data, automatically discover market segments and group customers into different market segments.

D)Given a dataset of patients diagnosed as either having diabetes or not, learn to classify new patients as having diabetes or not.

1. **Some of the problems below are best addressed using a supervised learning algorithm, and the others with an unsupervised learning algorithm. Which of the following would you apply supervised learning to? (Select all that apply.) In each case, assume some appropriate dataset is available for your algorithm to learn from. (2 marks)**

A)In farming, given data on crop yields over the last 50 years, learn to predict next year's crop yields.

B)Given a large dataset of medical records from patients suffering from heart disease, try to learn whether there might be different clusters of such patients for which we might tailor separate treatments.

C)Given data on how 1000 medical patients respond to an experimental drug (such as effectiveness of the treatment, side effects, etc.), discover whether there are different categories or "types" of patients in terms of how they respond to the drug, and if so what these categories are.

D)Examine a web page, and classify whether the content on the web page should be considered "child friendly" (e.g., non-pornographic, etc.) or "adult."

**4)Suppose you are working on weather prediction, and your weather station makes one of three predictions for each day's weather: Sunny, Cloudy or Rainy. You'd like to use a learning algorithm to predict tomorrow's weather. Would you treat this as a classification or a regression problem? ( 1 mark)**