

## Fundamentals of Machine Learning

**Submit by:** Friday 25th March- 2022 (11:59 PM-midnight)

**Points:** 5

Please read the chapter “The Landscape of Machine Learning” from the book “Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow, 2nd Edition” to answer the following essay questions.

***Q1: What are the two main types of learning systems? Describe each type with its main areas of applications and the most popular learning tasks used for those tasks. (1 Marks)***

***Q2: For each of the following scenarios, determine the type of machine learning task required: (0.5 Marks)***

- a. Segmenting your customers into multiple groups***
- b. Making a robot to walk in various unknown terrains***
- c. Detecting spam emails***

***Q3: What is model-based learning and what are the main steps taken by a model-based learning system? (1 Marks)***

***Q4: Describe four main problems prevalent in the realm of machine learning and describe the main methods currently used to combat these issues. (1 Marks)***

***Q5: What is cross-validation and why does it become important during model training? (1 Marks)***

***Q6: Explain the concept and importance of regularization in machine learning systems. (0.5 Marks)***