**DAT-410 Machine Learning**

***Homework:* 03**

***Assigned:* 04/16/2024**

***Due:* 04/23/2024**

***Points:* 50**

***Submission:*** Please submit a **.pdf** document (<your\_name>\_hw03**.pdf**)

Note: This homework is optional. Two out of three best scores will be considered.

Answer the following. (5 Points each)

1. List and define 6 types of classification with two examples for each.
2. List and define any 4 evaluation metrics along with its equation.
3. List any 5 differences between classification and regression.
4. Define the following for decision trees: root node, leaf node, internal node, splitting, parent node, and child node.
5. Give the algorithm for decision trees.
6. Explain random forests in detail with an example.
7. List any 4 differences between machine learning and deep learning.
8. Explain a perceptron in detail with an example.
9. Explain the types of stacking with examples.
10. Explain the process of backpropagation through gradient descent.