Assignment 10

Due on 2021-03-31, 23:00 EST.

Please use the following data for this assignment.

- Set the random seed to 0 so that the results are reproducible.
- Use the data points for the regression problem.
- Use the data points for the classification problem.
- Use the data points for the clustering problem.
- Use the data points for the anomaly detection problem.

Data:

- Regression:
  - X_train: [1, 2, 3, 4, 5], Y_train: [2, 4, 6, 8, 10]
  - X_test: [6, 7, 8, 9, 10], Y_test: [12, 14, 16, 18, 20]

- Classification:
  - X_train: [0, 0, 1, 1, 0, 1, 0, 1, 1, 0], Y_train: [0, 1, 0, 1, 0, 0, 1, 1, 0, 1]
  - X_test: [1, 1, 0, 0, 1, 0, 1, 1, 0, 1], Y_test: [1, 0, 1, 1, 1, 0, 0, 1, 1, 0]

- Clustering:
  - X_train: [0.1, 0.2, 0.3, 0.4, 0.5], Y_train: [0, 1, 0, 1, 0]
  - X_test: [0.6, 0.7, 0.8, 0.9, 1.0], Y_test: [1, 0, 1, 0, 1]

- Anomaly Detection:
  - X_train: [1, 2, 3, 4, 5], Y_train: [0, 0, 0, 0, 0]
  - X_test: [6, 7, 8, 9, 10], Y_test: [1, 1, 1, 1, 1]

Note:

- You can use any machine learning library like scikit-learn, TensorFlow, or PyTorch.
- You can use any programming language like Python, R, or Julia.
- You can submit your code and results in any format like Jupyter notebook, Python script, or R script.
- You must submit a report documenting your approach, results, and conclusions.
- The assignment is due on the specified date.
- Good luck!