**INF8245E: Machine Learning | Assignment #1**

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1. **Sampling**
   1. **Pseudocode**

X

* 1. **Sampling**

X

1. **Model selection**
   1. **Fit a 20-degree polynomial to the data**

X

* + 1. Training and validation RMSE

X

* + 1. Visualization

X

* + 1. Overfitting or underfitting

X

* 1. **L2 regularization**

X

* + 1. Plot training RMSE and validation RMSE

X

* + 1. Find best value of lambda

X

* + 1. Visualization

X

* + 1. X
  1. **What do you think is the degree of the source polynomial? Can you infer that from the visualization produced in 2.2.3?**

X

1. **Gradient descent for regression**
   1. **Fit linear regression model to dataset using stochastic gradient descent**

X

* 1. **Steps**

X

* 1. **Visualizations**

X

* 1. **Full-batch gradient descent**

X

* 1. **Full-batch vs stochastic**

X

1. Real life dataset
   1. Completing the data set
      1. Sample mean
      2. Other ways
      3. Better way
      4. Completed data set
   2. 5-fold cross-validation
   3. Ridge-regression