Assignments 8/25/23, 12:05 AM

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ToDos

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- 1. Train a supervised learning model on simple 2D data
 - 1. Model: Linear, Quadratic & Cubic
 - 2. Plot Loss over training cycle
 - 3. Compute Bias & Variance
 - 4. Experiments:
 - 1. Impact of model class on overfit, underfit
 - 2. Impact of training size on error, overfit, underfit
 - 3. How does k-fold Cross Validation helps in reducing the test error?
 - 4. Does k-fold Cross Validation lead to overfitting?
 - 5. Research: How overfitting can handled better?
- 2. Implement GD & SGD algorithm on simple 1D/2D problem
 - 1. Compare the time complexity of both methods.
 - 1. Plot a 2D plot of how each method approaches the optimal point.
 - 2. How step size impacts the computation speed/result?
 - 3. Does normalization help?
- 3. Implement a Linear Classifier for 2D example
 - 1. Data set
 - 1. Linearly separable
 - 2. Not linearly separable
 - 2. Find the margin of classifier
 - 3. With/o bias term
 - 4. Experiment with Loss functions
 - 1. 1/0 Loss
 - 2. Squared Loss
 - 3. What are problems with each?
 - 4. Perceptron Loss