

Assignment 1

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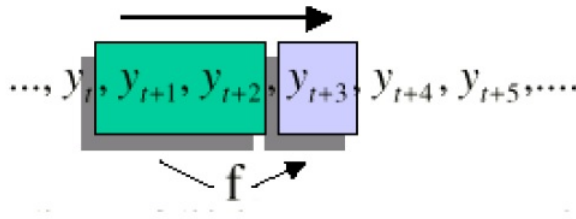
Assignment Policy: Read all the instructions below carefully before you start working on the assignment and before you make a submission.

- Please include your names and student IDs with your submission.
- You can do this assignment in groups of 4. Please submit no more than one submission per group.
- You have two weeks to work on this assignment.

1 Dataset and Task

You are given a real-life dataset of a laser measurement. You can find the training samples it in the *Xtrain.mat* file. The test samples will be released on Blackboard on May 9.

(a) Select your choice of neural networks model that is suitable for this task and motivate it. Train your model to predict one step ahead data point, during training (see following Figure). Scale your data before training and scale them back to be able to compare your predictions with real measurements.



(b) How many past time steps should you input into your network to achieve the best possible performance? (Hint: This is a tunable parameter and needs to be tuned).

(c) Once your model is trained, use it to predict the next 200 data points recursively. This means feeding each prediction back into the model to generate the subsequent predictions.)

(d) On May 9th, download the real test dataset and evaluate your model by reporting both the Mean Absolute Error (MAE) and Mean Squared Error (MSE) between its predictions and the actual test values. Additionally, create a plot comparing the predicted and real values to visually assess your model's performance.

Good luck! And if it all breaks, just call it 'stochastic behavior.' ;)