267: Homework #7

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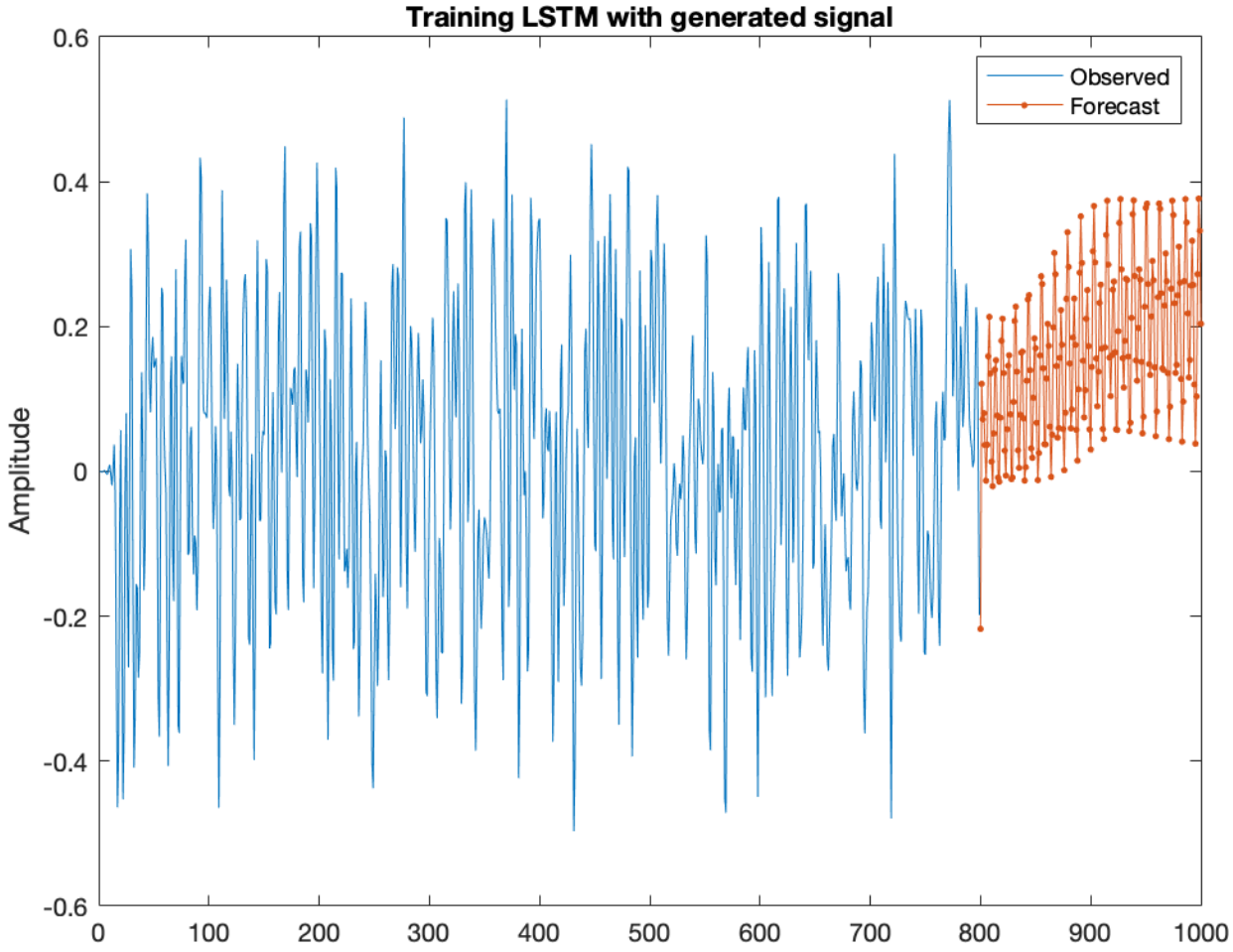
In this assignment we have compared the LSTM with AdaFIR. The LSTM contains more filters (layers) so we anticipate observing a better performance, but unfortunately, the LSTM had higher RMSE (root-mean-squared error), which may have been resulted due to underfitting the model.

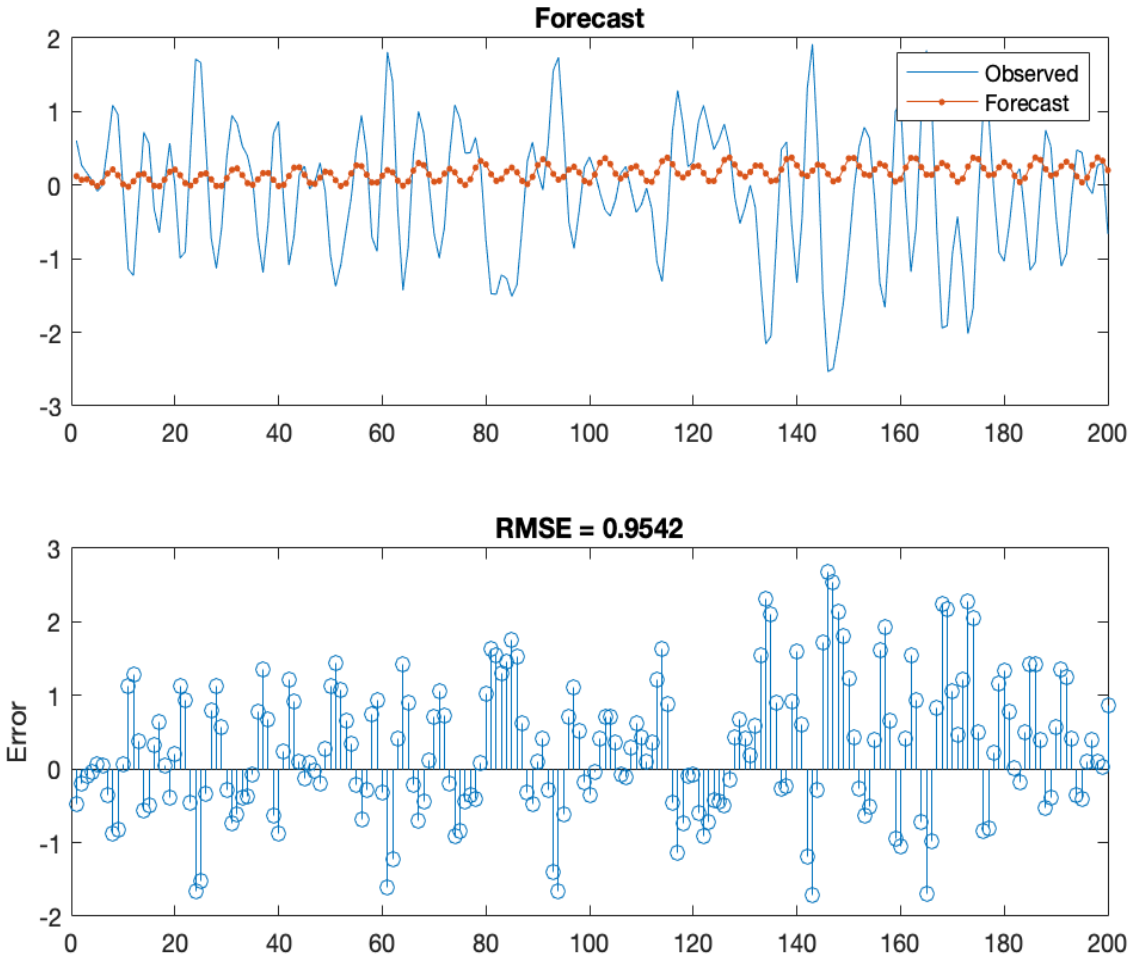
The LSTM RMSE: 0.1522
The AdaFIR RMSE: 0.01906

We have tried changing the hyperparameters, but this is the best result we have gotten.

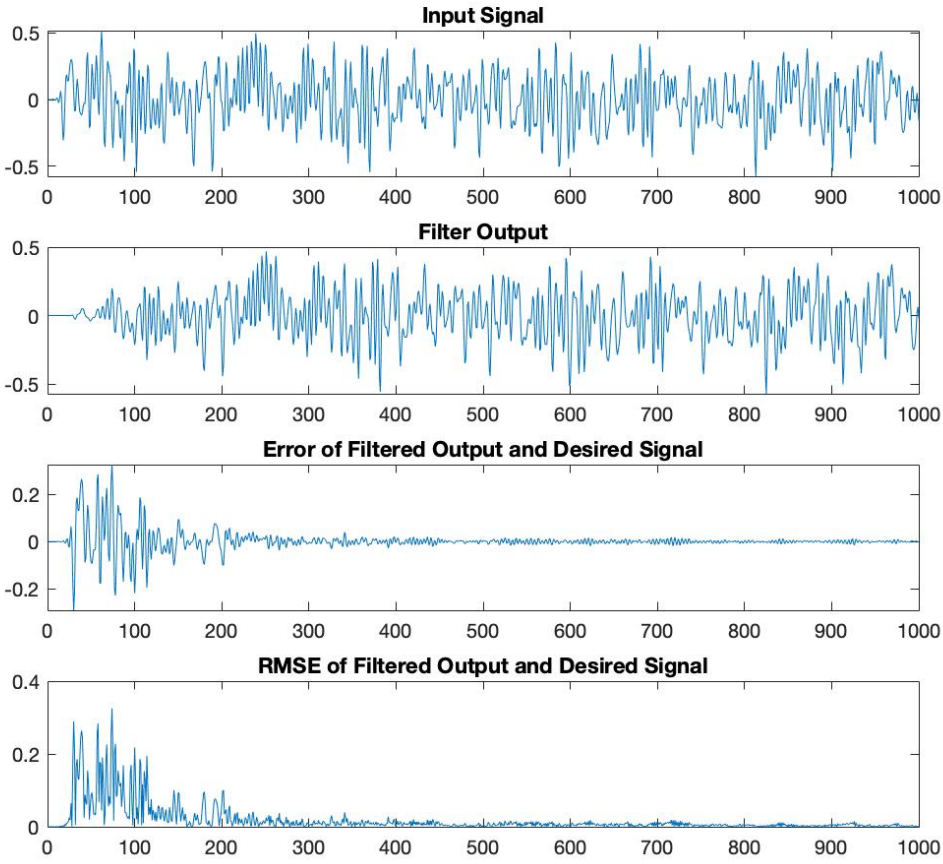
Here we can see the plot of the training time series with the forecasted values.



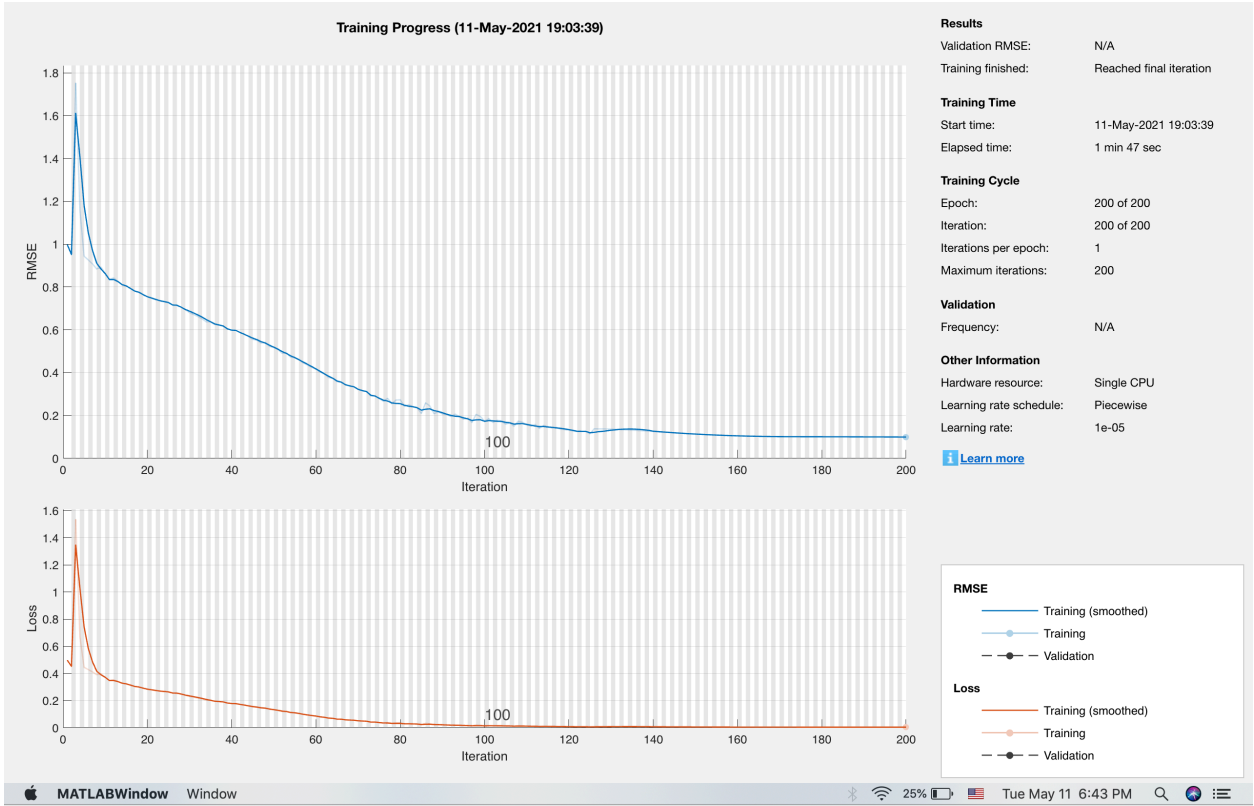
The next plot is a comparison between the forecasted values and the test data. The non-linearity of the observed data is higher, and it shows that our model is simple for forecasting this dataset. We suggest **piecewise polynomials**, **Spline Basis Representation** or **ARIMA** models.

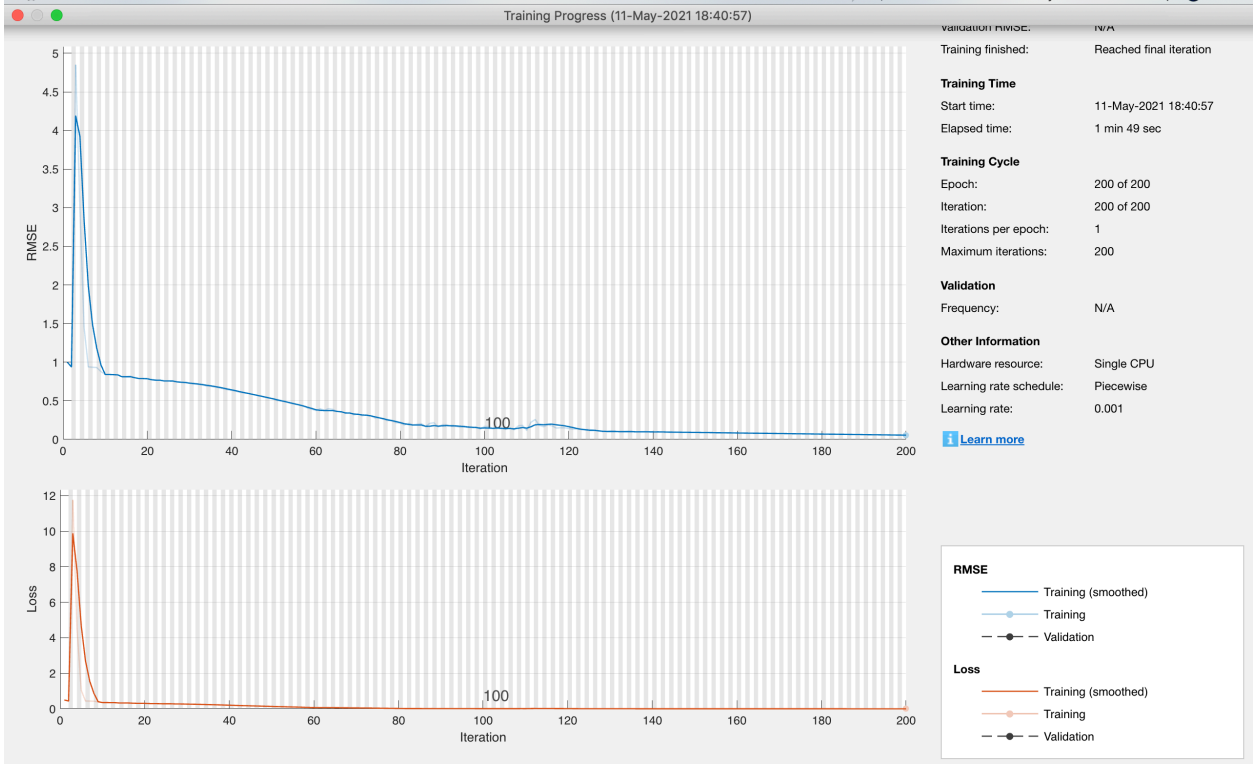


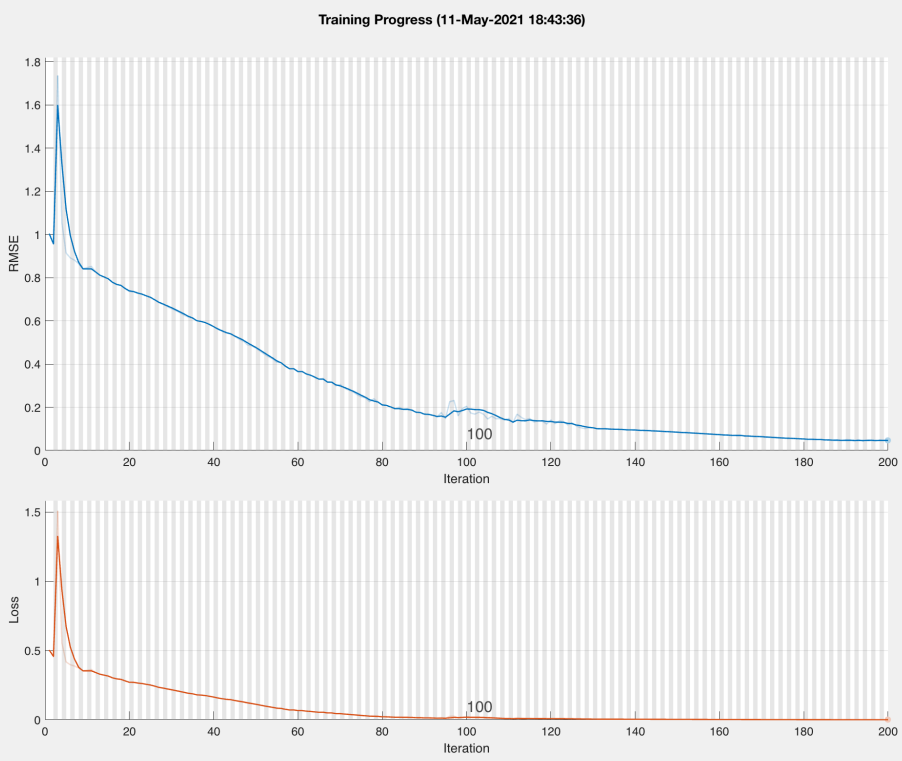
Now let's study the AdaFIR model.



The source code is submitted in Canvas.







Results

Validation RMSE:	N/A
Training finished:	Reached final iteration

Training Time

Start time:	11-May-2021 18:43:36
Elapsed time:	1 min 58 sec

Training Cycle

Epoch:	200 of 200
Iteration:	200 of 200
Iterations per epoch:	1
Maximum iterations:	200

Validation

Frequency:	N/A

Other Information

Hardware resource:	Single CPU
Learning rate schedule:	Piecewise
Learning rate:	0.001

Learn more

RMSE

- Training (smoothed)
- Training
- Validation

Loss

- Training (smoothed)
- Training
- Validation