INF5870:
ASSIGNMENT 2
REPORT

By
Kristoffer Osen, kristogo
Dawood Ahmad, dawoodah
Erlend Westbye, erlenwe
Namrah Azam, namraha

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Task 1

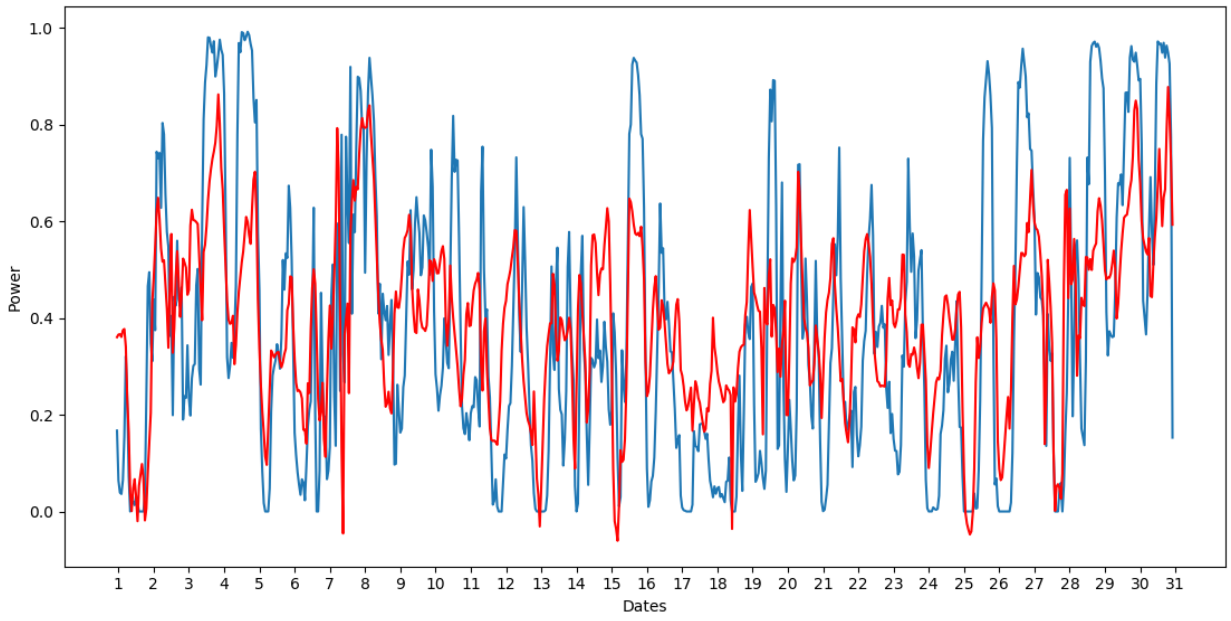
Algorithm	RMSE	Comments
LR	0.343555295955	
KNN	0.366877736484	
SVR	0.213729843753	
ANN	0.216068171748 (varying)	

Supported Vector Regression gives the most accurate prediction for energy produces in 11.2013. K-Nearest Neighbor gets the highest RMSE. We have used K = 10 for this purpose. A lower K would produce a higher RMSE and a higher K would result in a lower RMSE, although not low enough to challenge SVR or ANN. The neural network gives varying results for each run, giving a RMSE near 0.216-0.217.

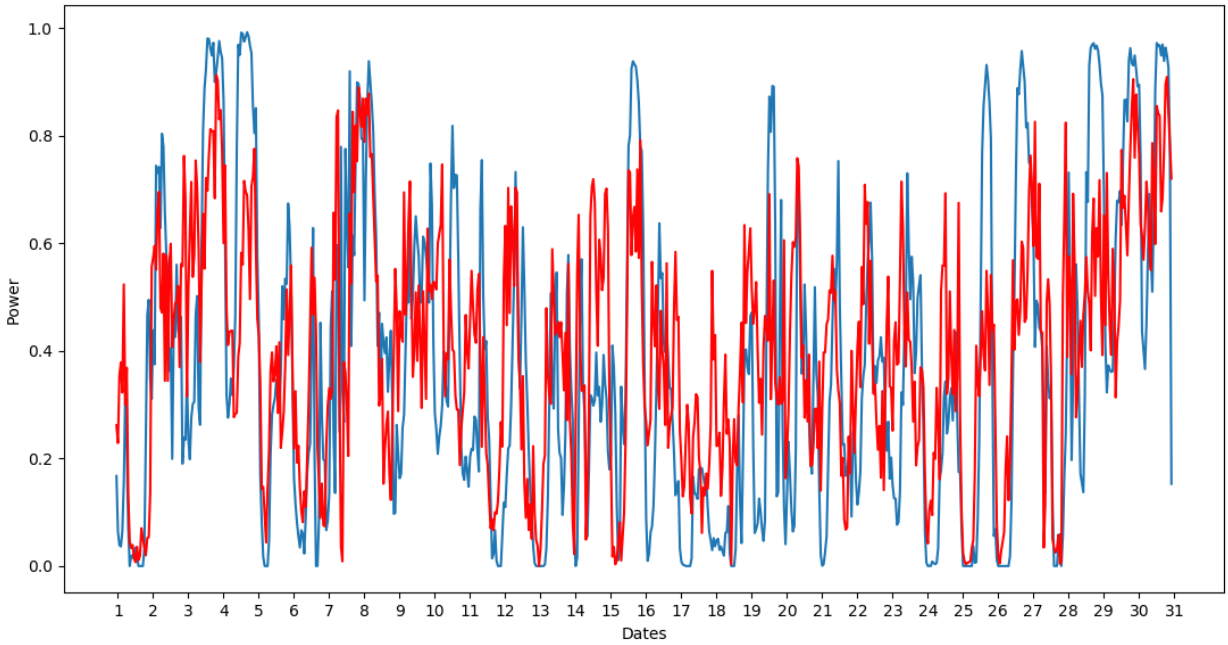
Plots

Red curves are the predictions.
Blue curves are the true wind energy measurements .

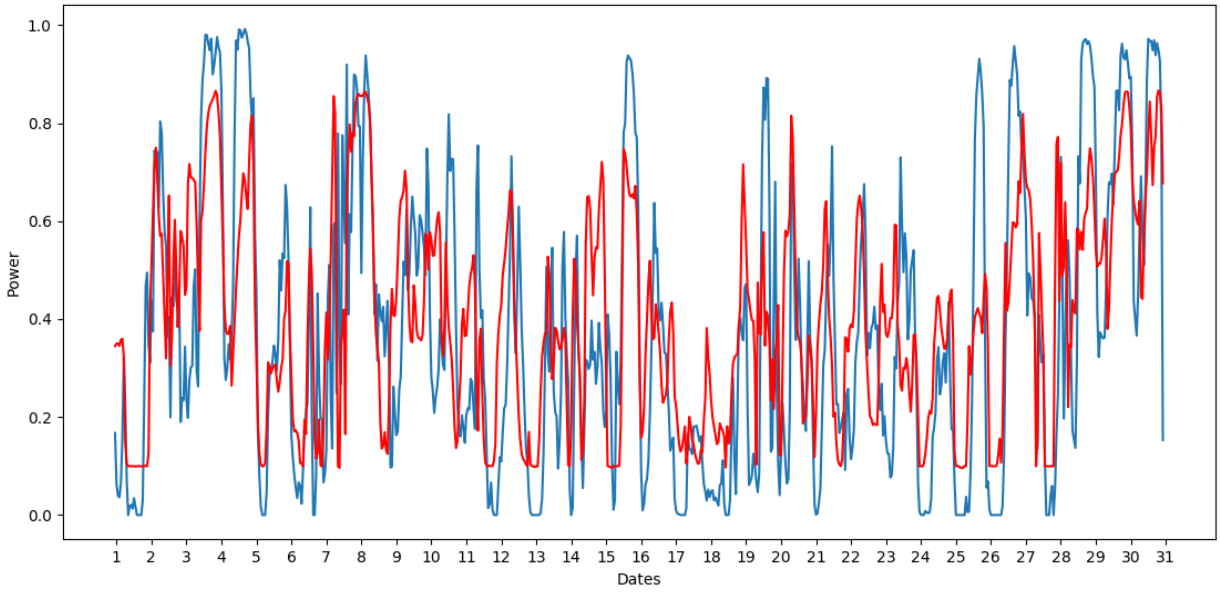
Linear Regression



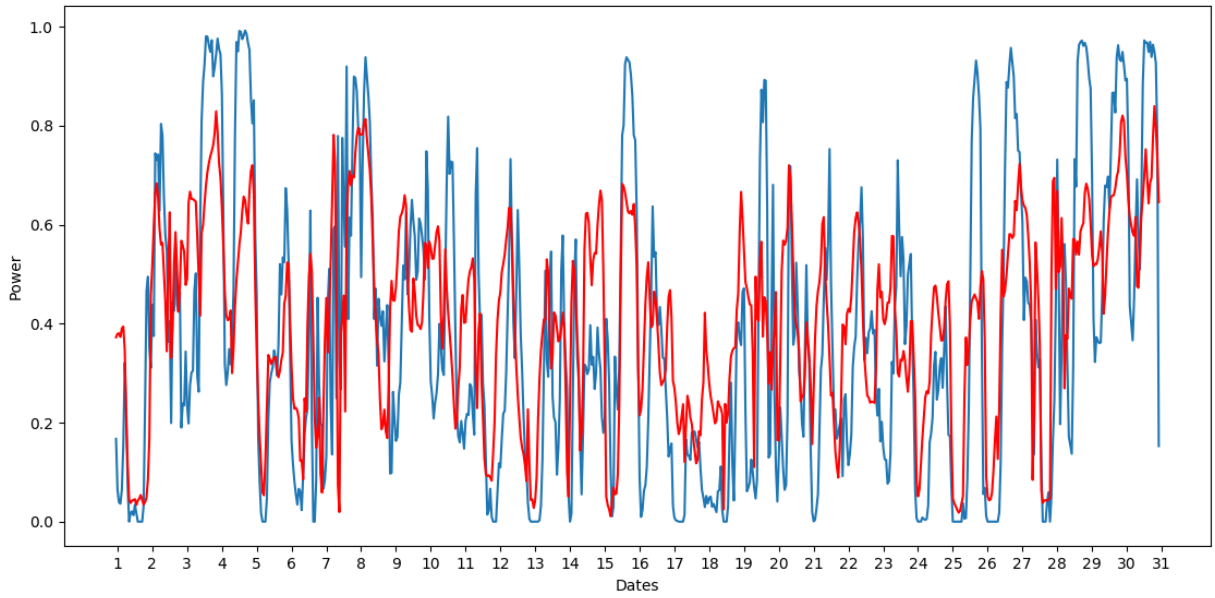
K-Nearest Neighbor



Supported Vector Regression



Neural Network

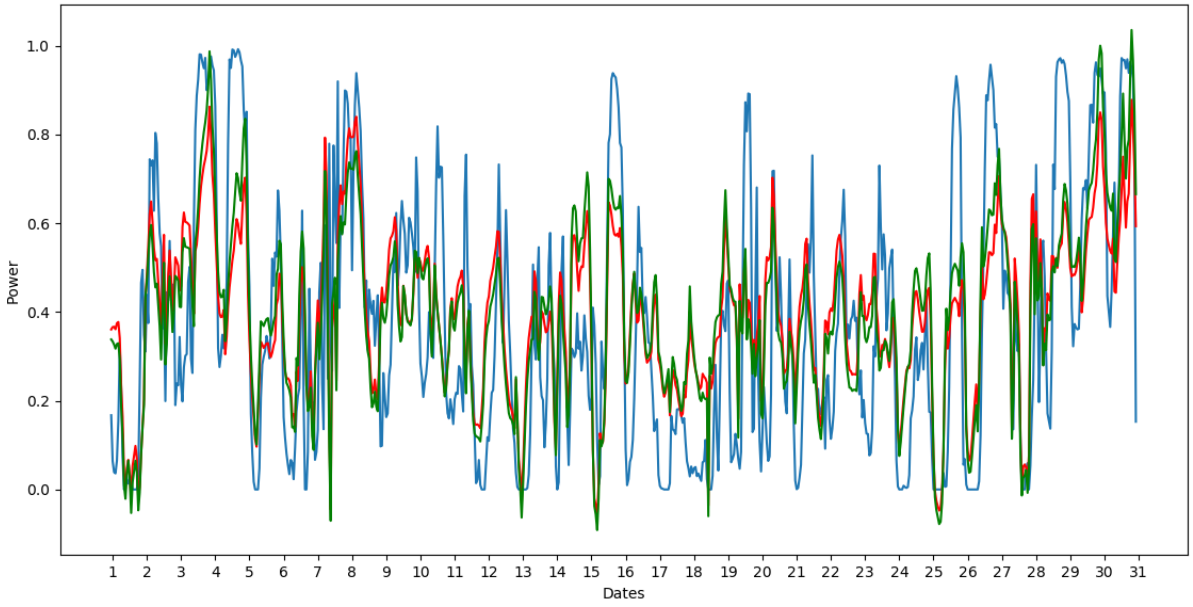


Task 2

Algorithm	RMSE
LR	0.343555295955
MLR	0.354657062698 (varying)

Using wind direction in addition to wind speed in the linear regression model gives a less accurate prediction of the power production in 11.2013.

Blue curve: Actual power production
Red curve: Prediction using Linear Regression
Green Curve: Prediction using Multiple Linear Regression



Task 3

We have not completed task 3 due to difficulty with the python implementation. In the code for task 3 we show how to train a recurrent neural network with time series data, but we have failed to apply the technique to this specific task.