INPUTS OF DIFFERENT MODELS

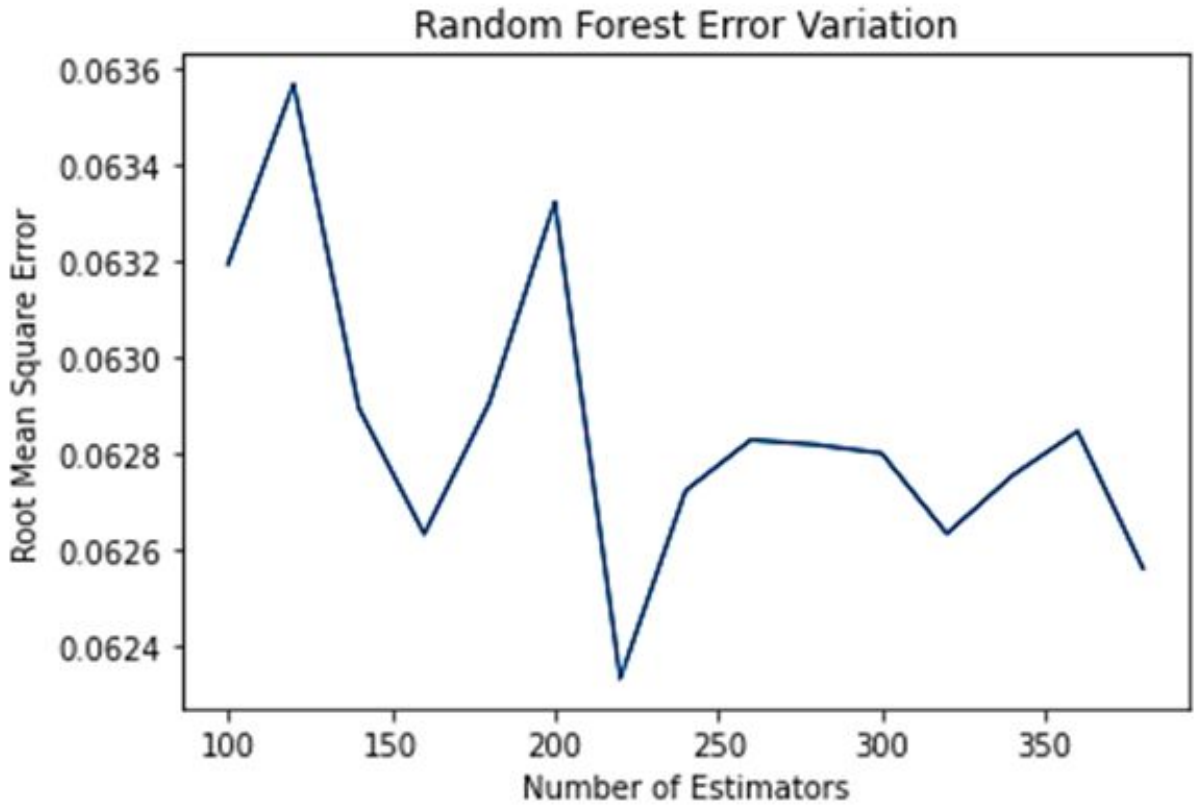
For RANDOM FOREST MODEL:

- **input features: x1(n-2), x1(n-1), x1(n), x2(n-2), x2(n-1), x2(n)**

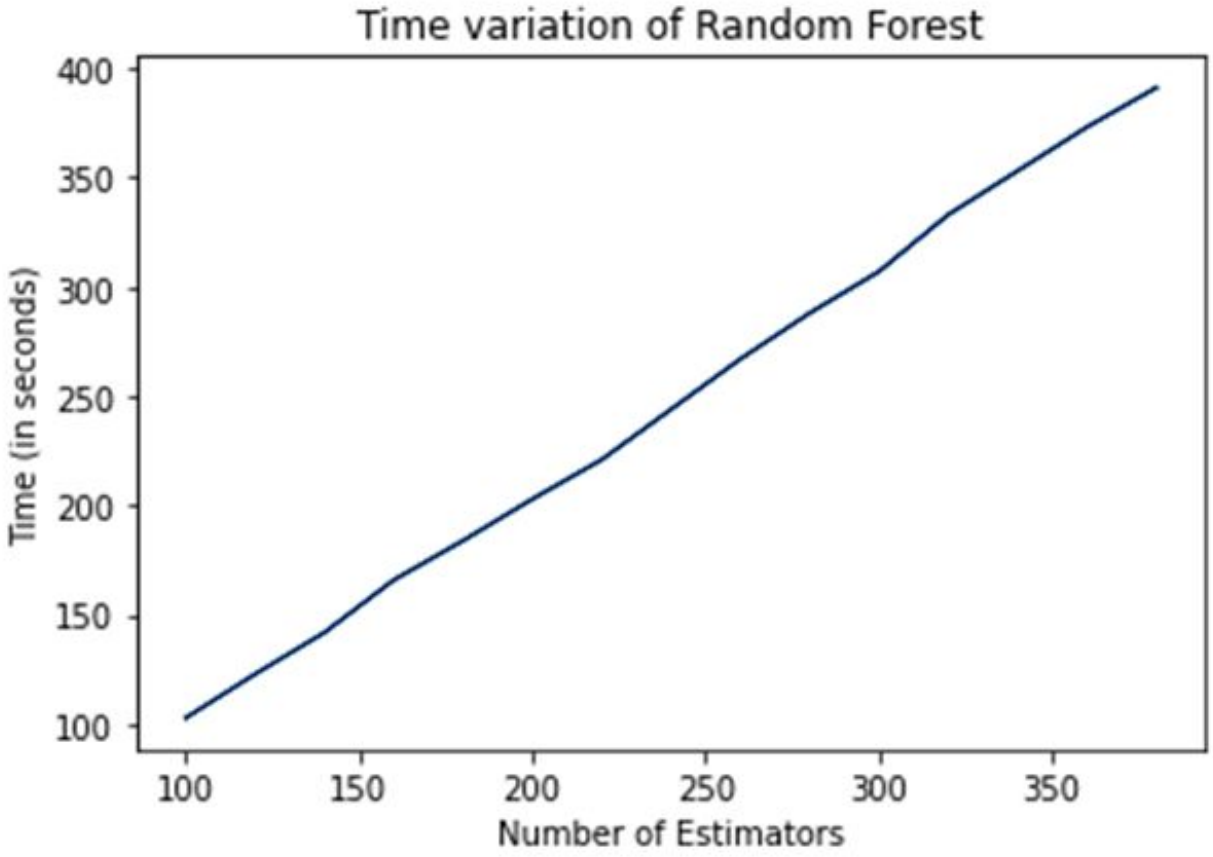
PAST 20 INPUTS COMPARISON:

- **x1(n-2*τ), x1(n-τ), x1(n), x2(n-2*τ), x2(n-τ), x2(n)**
- **For τ = 4 and m = 5**
- **For τ = 5 and m = 4**

Plot of Error vs number of Estimators

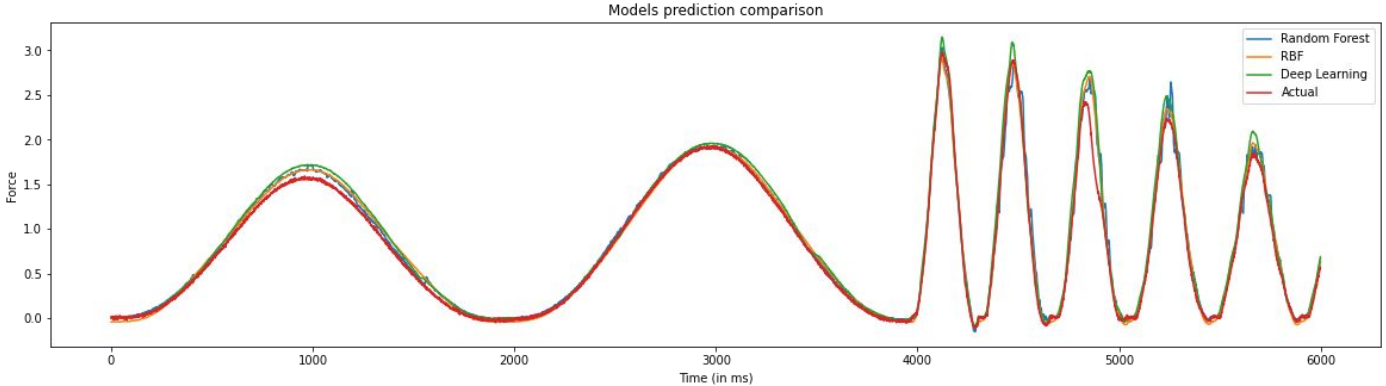


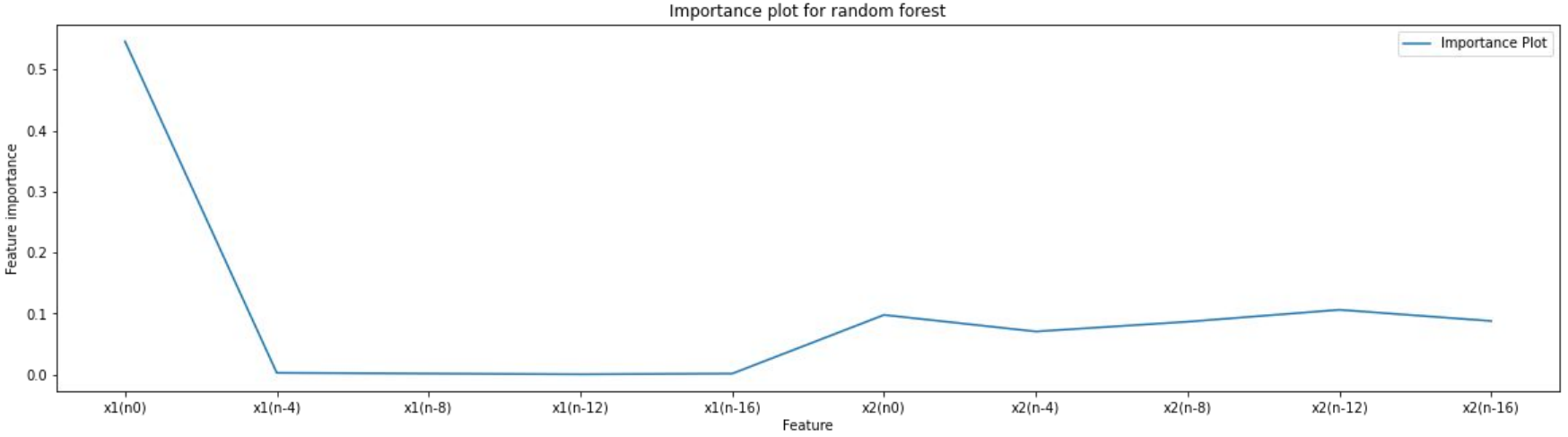
Training Time Plot



Input feature vs output feature	τ = 4 and m = 5 f1			τ = 5 and m = 4 f1		
Model	DL model	RBF	RF	DL model	RBF	RF
Max error	0.8490	0.690	0.8900	0.8183	0.6861	0.9079
Min error	1.251 * 10^-6	3.915 * 10^-7	1.387 * 10^-17	4.479 * 10^-7	8.253 * 10^-8	9.999 * 10^-7
Medin error	0.0215	0.0306	0.0188	0.0319	0.0311	0.01901
RMSE	0.0506	0.0509	0.060	0.061	0.0511	0.0598

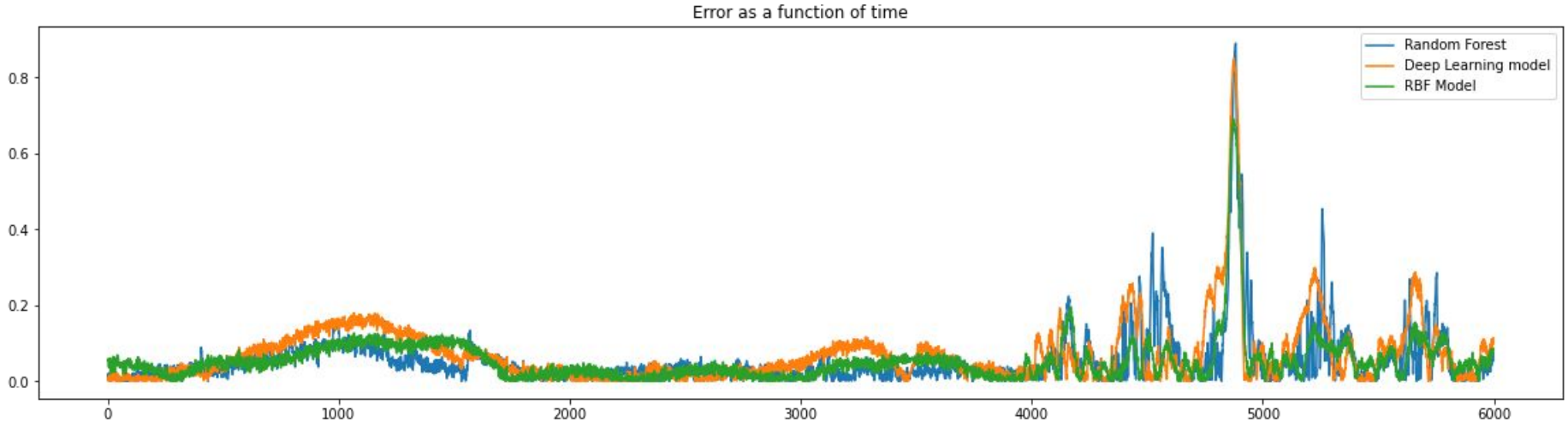
For τ = 4 and m = 5



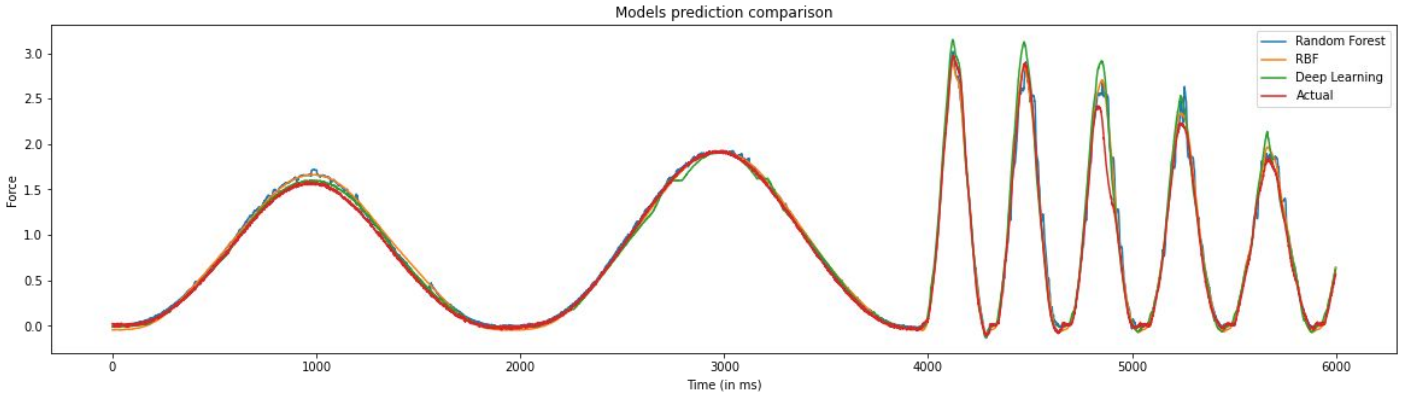


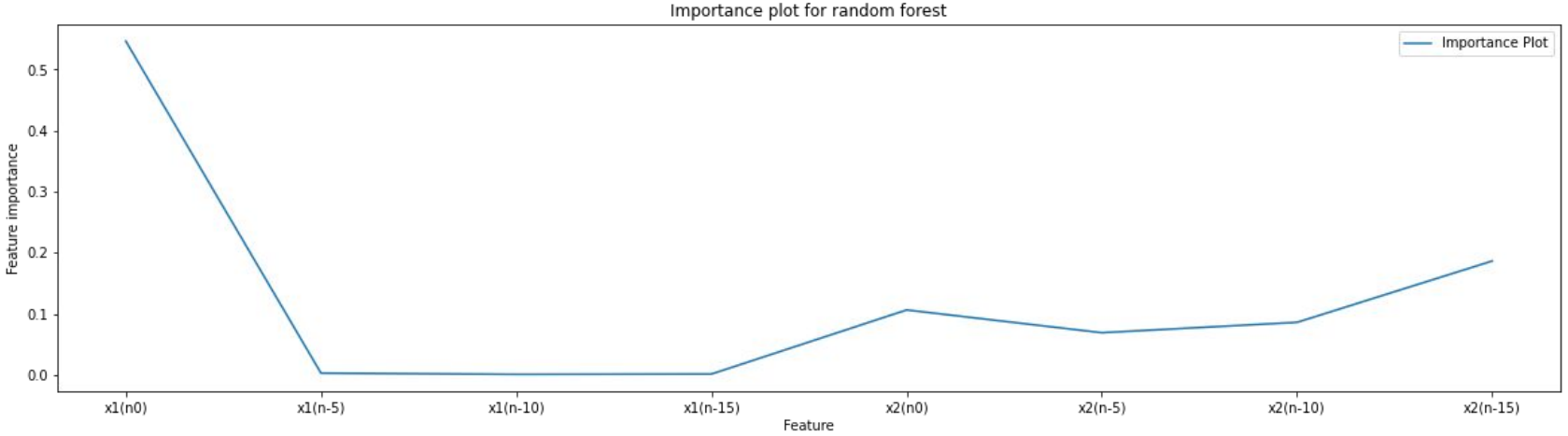
For τ = 4 and m = 5

Error as a function of time



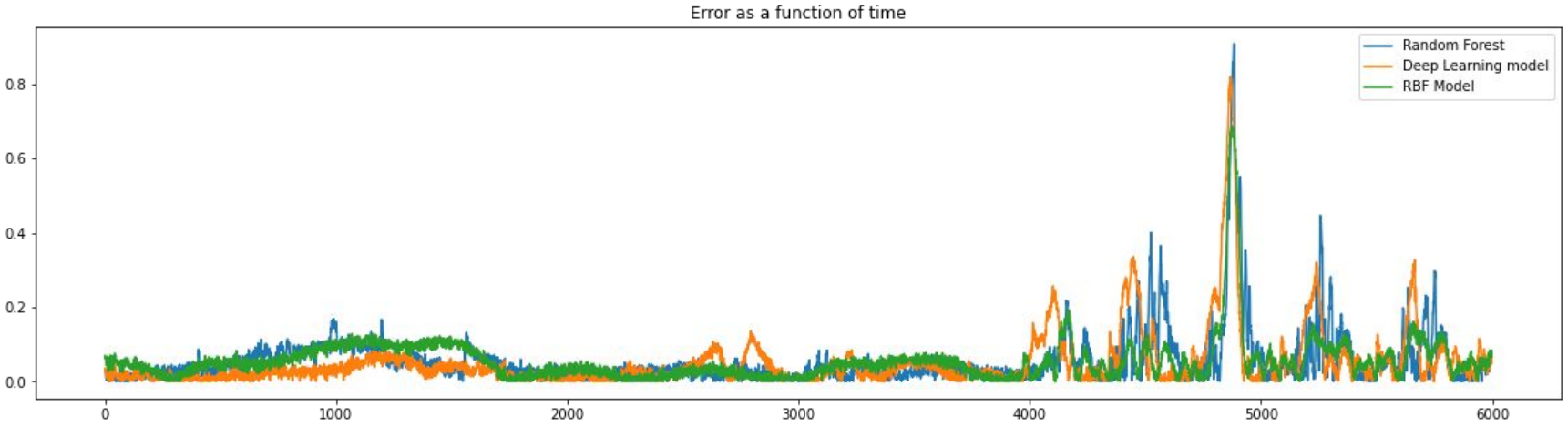
For τ = 5 and m = 4





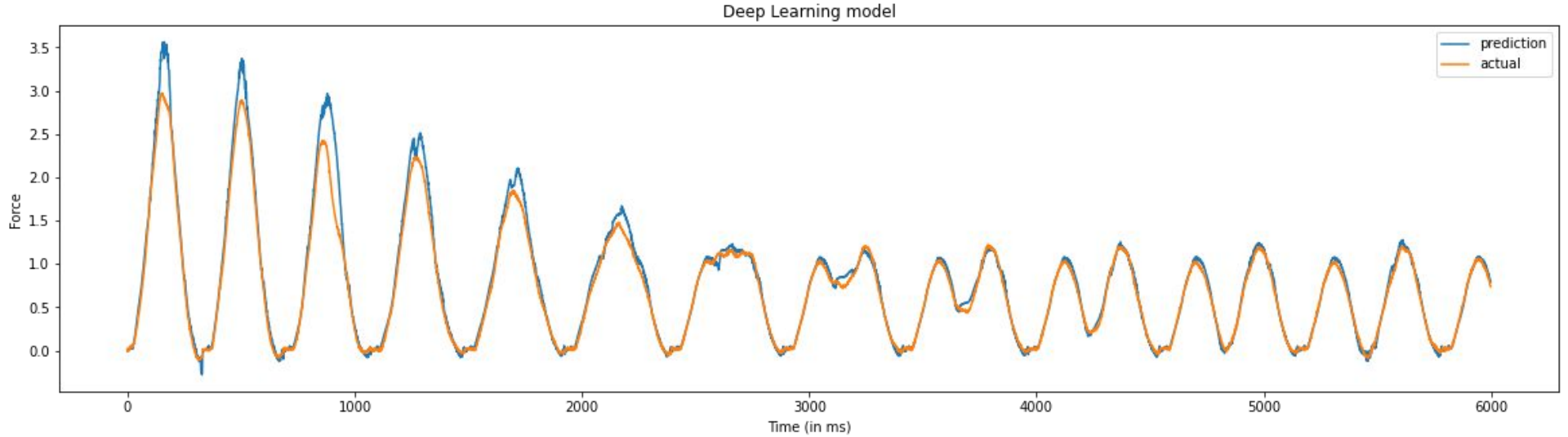
For τ = 5 and m = 4

Error as a function of time



Using Fractional Derivative

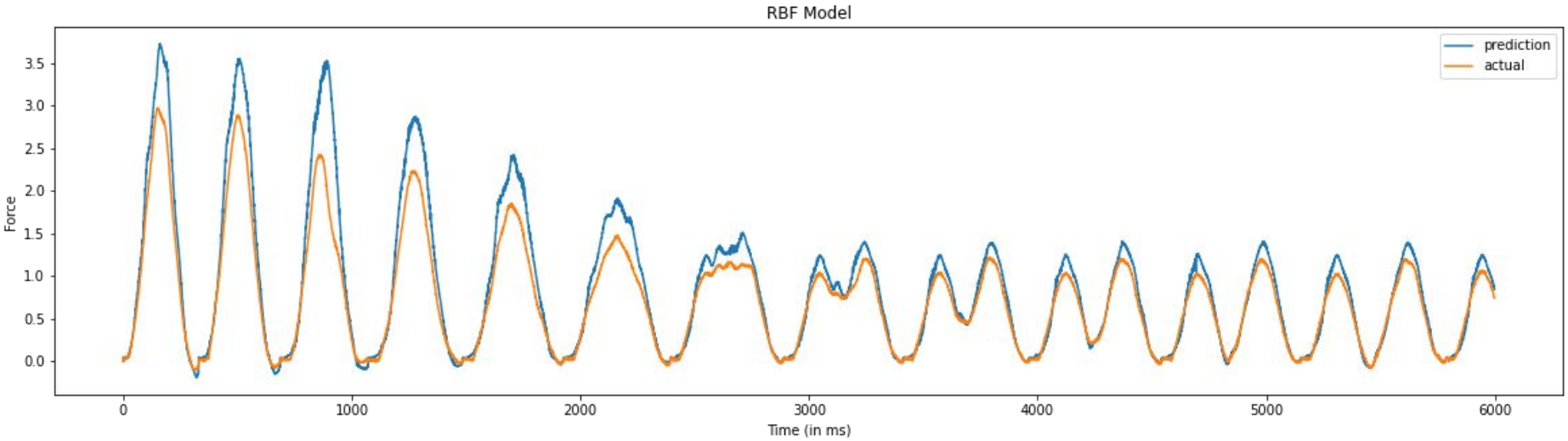
Deep Learning



Minimum Error = [2.3841858e-07]
Maximum Error = [0.9265578]
Median Value of Error = [0.01930155]

Root mean square error: 0.0529843310

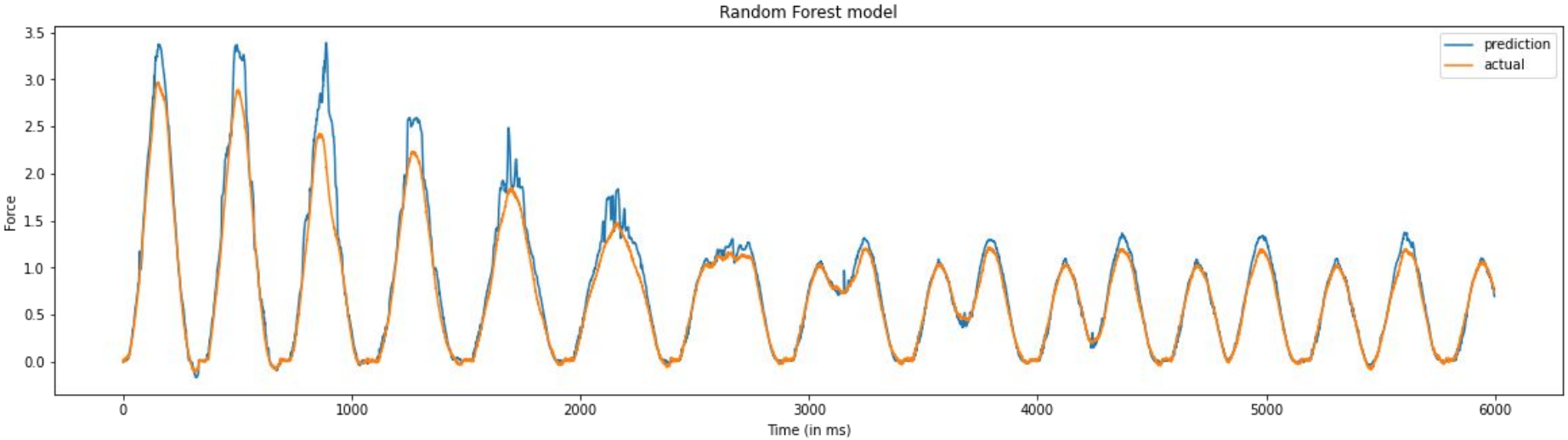
RBF MODEL



Minimum Error = 2.898713248322693e-07
Maximum Error = 1.6408830599132698
Median Value of Error = 0.02800820977628604

Root mean square error: 0.09711080

Random Forest Model



Minimum Error = 2.000000000335067e-07
Maximum Error = 1.3349364500000003
Median Value of Error = 0.01872626666

Root Mean Squared error of Random Forest 0.07109232