CATBOOST RESULTS

Updated Results of RBF and other models comparison

INPUTS OF DIFFERENT MODELS

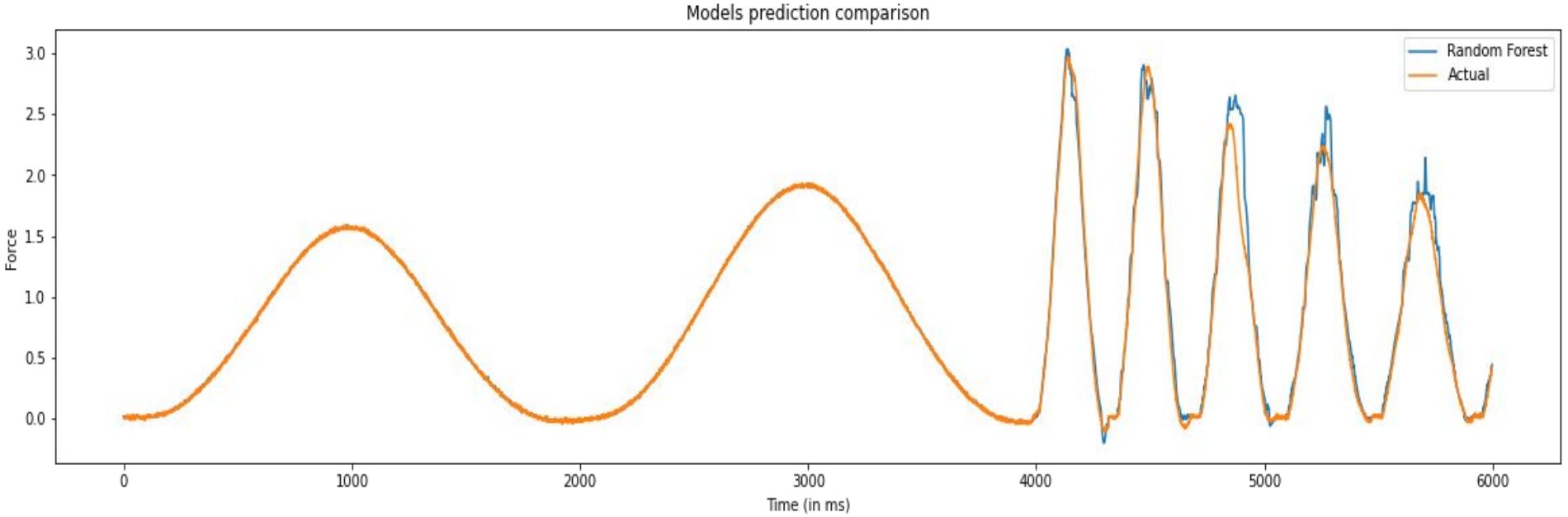
For RF, RBF, CatBoost, SVR and GradientBoosting:

- **input features: position, velocity and Filtered Velocity**

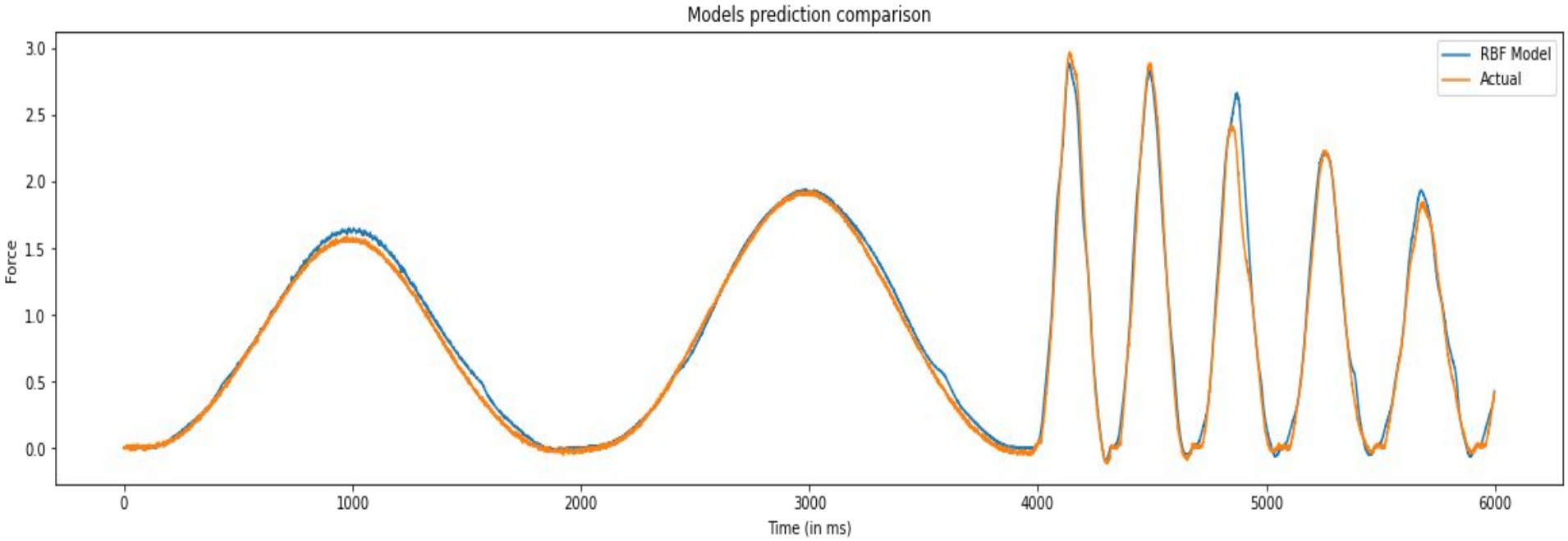
Input feature vs output feature	**position,velocity and filtered velocity** f1				
Model	CatBoost	RBF	Gradient Boost	SVR	RF
Max error	0.8863	0.6692	.9828	1.311	1.0004
Min error	2.67 * 10^-7	3.95 * 10^-8	4.93*10^-7	1.52*10^-7	9.99 * 10^-7
Medin error	0.0156	0.0250	0.0263	0.0263	0.0182
RMSE	**0.0418**	**0.0603**	**0.0527**	**0.0959**	**0.0599**

Input feature vs output feature	**position,velocity and filtered velocity** f1				
Model	CatBoost	RBF	Gradient Boost	SVR	RF
Time taken by the model(in sec)	0:00:07	0:00:32	0:00:20	0:00:37	0:01:09

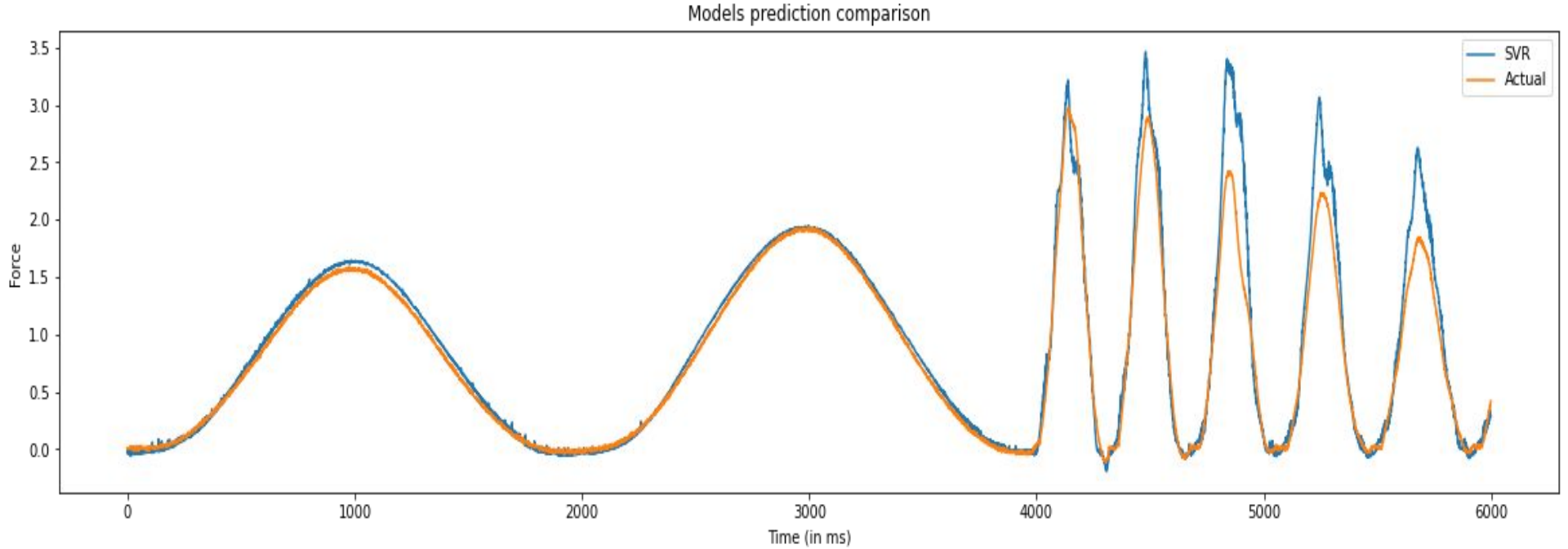
Model Prediction Comparison for RF



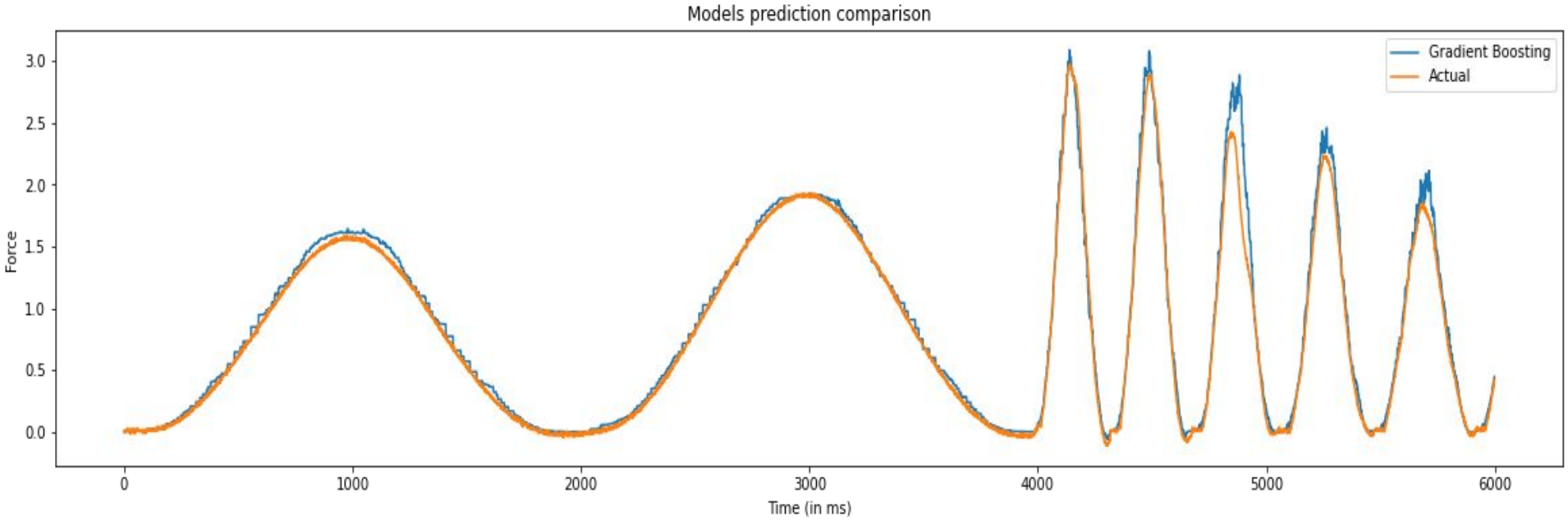
Model Prediction Comparison for RBF



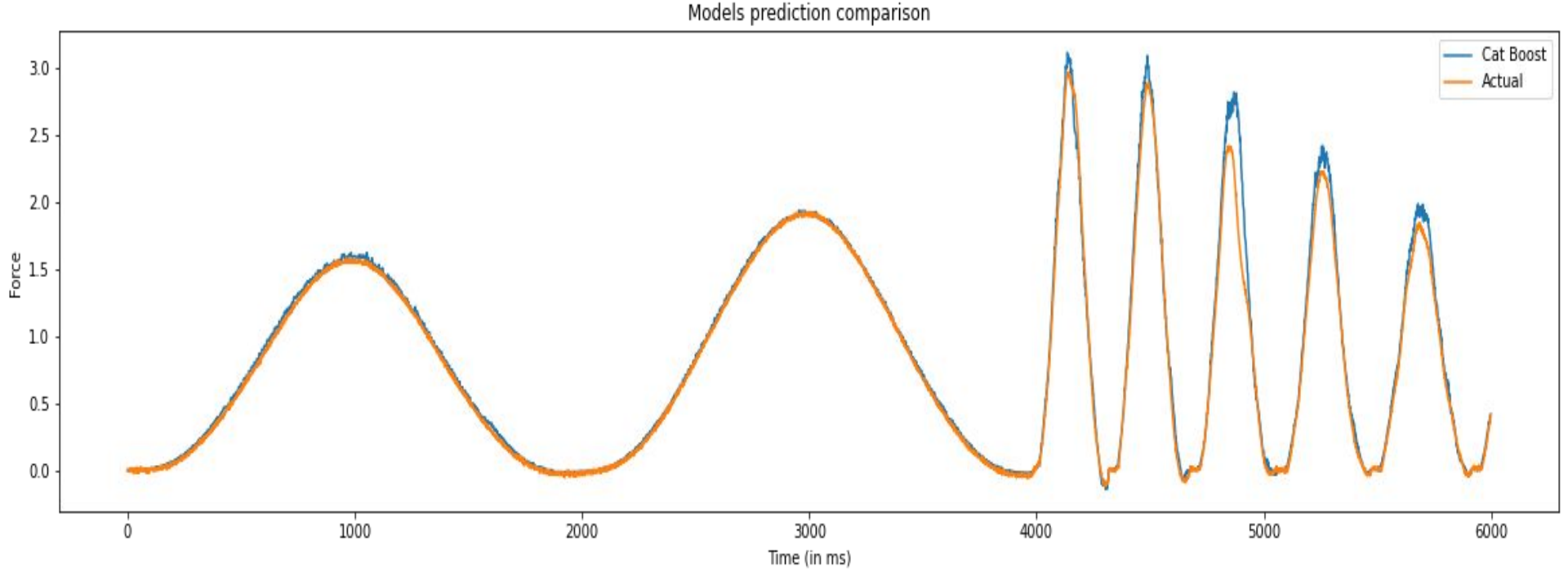
Model Prediction Comparison for SVR



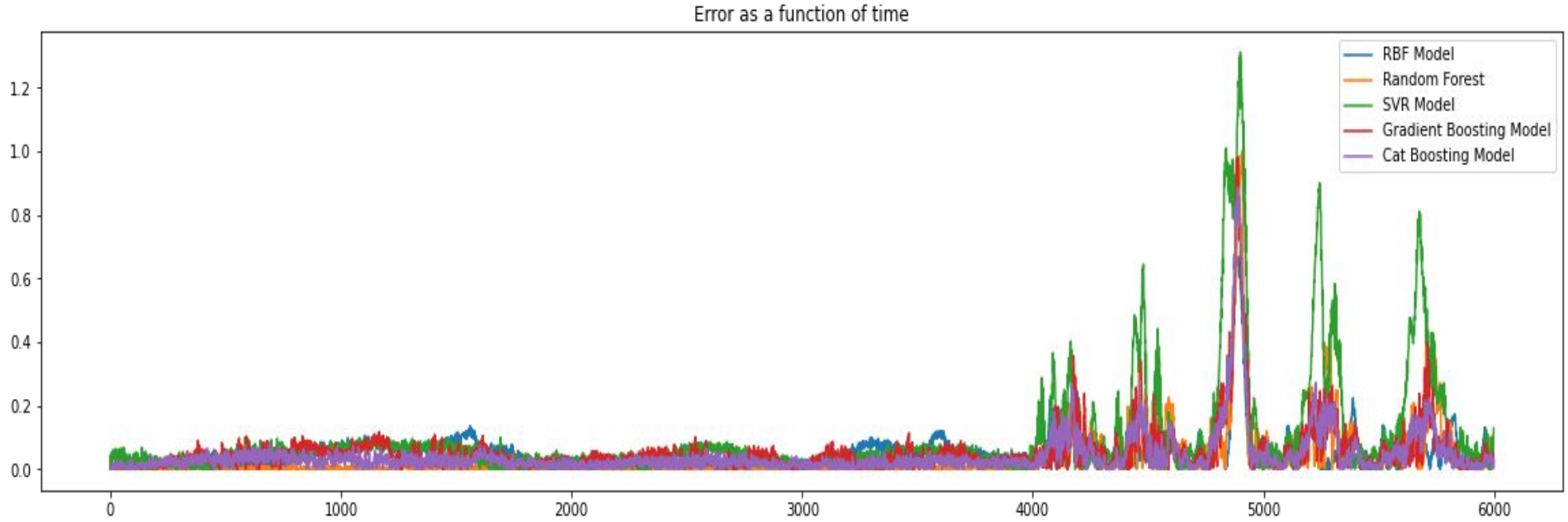
Model Prediction Comparison for Gradient Boost



Model Prediction Comparison for CatBoost



Error as a function of time Comparison for all models



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 10 INPUTS COMPARISON:

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

Input feature vs output feature	τ = 2 and m = 5 f1			τ = 5 and m = 2 f1		
Model	RBF	SVR	RF	RBF	SVR	RF
Max error	0.7506	0.6910	0.9181	0.8138	0.6970	0.9541
Min error	3.261 * 10^-7	2.264 * 10^-6	5.551 * 10^-17	3.09 * 10^-6	7.083 * 10^-7	1.0 * 10^-6
Medin error	0.0235	0.0306	0.0183	0.0464	0.0329	0.0211
RMSE	**0.047**	**0.050**	**0.059**	**0.0814**	**0.0522**	**0.062**

Input feature vs output feature	τ = 2 and m = 5 f1			τ = 5 and m = 2 f1		
Model	RBF	SVR	RF	RBF	SVR	RF
Time taken by the model(in sec)	0:00:44	0:00:39.8	0:01:46	0:00:17.7	0:00:36	0:00:46