Monash Time-Series Forecasting Archive Replication

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Abstract

The "Monash Time Series Forecasting Archive" significantly enhances research in time series forecasting, unveiling a meticulously selected assortment of 25 datasets across diverse sectors like energy, banking, and tourism.

This initiative tackles the pressing need for diverse, comprehensive datasets to benchmark a broad spectrum of forecasting models, spanning from conventional univariate to modern global and multivariate methodologies.

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Table 1: Datasets in the current time series forecasting archive

	Dataset	Domain	No: of Series	Min. Length	Max. Length	No: of Freq	Missing	Competition	Multivariate
0	M1	Multiple	1023	18	150	3	No	Yes	No
1	M3	Multiple	3003	20	144	4	No	Yes	No
2	M4	Multiple	100000	19	9933	6	No	Yes	No
3	Tourism	Tourism	1311	11	333	3	No	Yes	No
4	CIF 2016	Banking	72	28	120	1	No	Yes	No
5	London Smart Meters	Energy	5560	288	39648	1	Yes	No	No
6	Aus. Electricity Demand	Energy	5	230736	232272	1	No	No	No
7	Wind Farms	Energy	339	6345	527040	1	Yes	No	No
8	Dominick	Sales	115704	28	393	1	No	No	No
9	Bitcoin	Economic	18	4581	4581	1	Yes	No	No
10	Pedestrian Counts	Transport	66	576	96424	1	No	No	No
11	Vehicle Trips	Transport	329	70	243	1	Yes	No	No
12	KDD Cup 2018	Transport	270	9504	10920	1	Yes	Yes	No
13	Weather	Weather	3010	1332	65981	1	No	No	No
14	NN5	Banking	111	791	791	2	Yes	Yes	Yes
15	Web Traffic	Web	145063	803	803	1	Yes	Yes	Yes
16	Solar	Energy	137	52560	52560	2	No	No	Yes
17	Electricity	Energy	321	26304	26304	2	No	No	Yes
18	Car Parts	Sales	2674	51	51	1	Yes	No	Yes
19	FRED-MD	Economics	107	728	728	1	No	No	Yes
20	San Francisco Traffic	Transport	862	17544	17544	2	No	No	Yes
21	Rideshare	Transport	2304	541	541	1	Yes	No	Yes
22	Hospital	Health	767	84	84	1	No	No	Yes
23	COVID Deaths	Nature	266	212	212	1	No	No	Yes
24	Temperature Rain	Nature	32072	725	725	1	Yes	No	Yes
25	Sunspot	Nature	1	73924	73924	1	Yes	No	No
26	Saugeen River Flow	Nature	1	23741	23741	1	No	No	No
27	US Births	Nature	1	7305	7305	1	No	No	No
28	Solar Power	Energy	1	7397222	7397222	1	No	No	No
29	Wind Power	Energy	1	7397147	7397147	1	No	No	No

Table 2: Mean MASE results. The best model across each dataset is highlighted in boldface.

	Dataset	SES	Theta	ETS	(DHR-) ARIMA	PR	Cat Boost	ARIMA	TBATS
0	M1 Yearly	4.938	4.191	3.771	-	4.588	-	4.479	**3.499**
1	M1 Quarterly	1.929	1.702	**1.658**	-	1.892	-	1.787	1.694
2	M1 Monthly	1.379	1.091	**1.074**	-	1.123	-	1.165	1.118
3	M3 Quarterly	1.417	**1.117**	1.170	-	1.248	-	1.240	1.256
4	M3 Monthly	1.091	0.864	0.865	-	1.010	-	0.873	**0.861**
5	M4 Yearly	-	-	-	-	-	-	-	**3.437**
6	M4 Quarterly	-	-	-	-	-	-	-	**1.186**
7	M4 Weekly	-	-	-	-	-	-	-	**0.505**
8	Tourism Yearly	3.253	**3.015**	3.395	-	3.516	-	3.775	3.685
9	Tourism Quarterly	3.210	1.661	**1.592**	-	1.643	-	1.776	1.835
10	Tourism Monthly	3.306	1.649	**1.526**	-	1.678	-	1.587	1.751
11	Vehicle Trips	2.273	1.914	1.964	-	2.196	-	2.051	**1.856**
12	NN5 Daily	-	-	-	-	-	0.970	-	**0.858**
13	NN5 Weekly	0.903	0.885	0.911	0.887	**0.854**	-	-	0.872
14	Solar Weekly	1.215	1.224	1.134	**0.848**	1.053	-	-	0.916
15	Electricity Weekly	1.536	1.476	1.526	0.878	0.916	-	-	**0.792**
16	Traffic Weekly	**1.116**	1.121	1.125	1.191	1.122	-	-	1.148
17	Hospital	0.813	**0.761**	0.765	-	0.782	-	0.788	0.768
18	Sunspot	0.128	0.128	0.128	-	0.099	-	0.067	**0.064**
19	Bitcoin	5.289	5.223	**4.538**	-	4.616	-	5.498	4.602
20	CIF 2016	1.291	0.997	**0.841**	-	1.019	-	0.927	0.861
21	COVID Deaths	7.776	7.793	**5.326**	-	8.731	-	6.104	5.719
22	Car Parts	0.897	0.914	0.925	-	**0.755**	-	0.927	1.002
23	Fred Md	0.617	0.698	**0.468**	-	8.827	-	0.532	0.502
24	M3 Yearly	3.167	**2.774**	2.860	-	3.223	-	3.417	3.127
25	Saugeen River Flow	1.426	**1.425**	2.036	-	1.674	-	1.548	1.477
26	US Births	4.343	2.138	1.529	-	2.094	-	1.917	**1.453**