

Table 1: Performance on forecasting tasks on two public datasets.

Task & Dataset Model	Short-term signal forecasting				Long-term signal forecasting				Frequency-phase forecasting			
	MAYO		FNUSA		MAYO		FNUSA		MAYO		FNUSA	
	MAE	MSE	MAE	MSE	MAE	MSE	MAE	MSE	ph. PLV	freq. MAE	ph. PLV	freq. MAE
RP	1.3881	3.0642	1.3786	3.0317	1.4025	3.1277	1.3839	3.0562	0.2194	1.0222	0.2232	1.0225
TS	0.9464	1.4572	0.9505	1.4846	0.8318	1.1138	0.8353	1.1213	0.5064	0.0501	0.5076	0.0517
CPC	0.8009	1.0311	0.7922	1.0306	0.7979	1.0254	0.7898	1.0249	*0.5601	0.1183	*0.5616	0.1119
BENDR	0.9673	1.4950	0.9507	1.4585	1.0943	2.4782	1.0921	2.4325	0.5459	0.0638	0.5486	0.0639
MVTS	1.1027	1.7043	1.0838	1.6627	1.2475	2.8251	1.2450	2.7731	0.5389	0.0672	0.5397	0.0674
BrainBERT	*0.7971	<u>1.0110</u>	<u>0.7829</u>	<u>0.9971</u>	*0.7943	*1.0183	*0.7872	*1.0202	0.5075	<u>0.0355</u>	0.5091	<u>0.0356</u>
PatchTST	0.7969	*1.0227	*0.7879	*1.0237	0.7479	0.9815	0.7498	1.0183	0.5627	*0.0455	0.5640	*0.0470
TSTCC	1.4434	2.7430	1.4532	3.0083	1.7217	2.7587	1.7246	2.8697	0.1285	0.2756	0.1288	0.2752
TFC	2.1544	4.0941	2.1689	4.4900	2.5697	4.1174	2.5741	4.2831	0.0714	0.5367	0.0712	0.5366
CoST	0.8812	1.2783	0.8935	1.2895	0.7996	1.0299	0.8094	1.0582	0.5279	0.0482	0.5292	0.0484
BPT	0.6860	0.8064	0.6915	0.8249	0.7329	0.8856	0.7374	0.9118	0.5824	0.0304	0.5814	0.0305

Table 2: Performance on the imputation task on two public datasets.

Task & Dataset Model	Imputation			
	MAYO		FNUSA	
	MAE	MSE	MAE	MSE
RP	0.7025	0.8340	0.7079	0.8556
TS	0.7381	0.8935	0.7427	0.9215
CPC	0.7725	0.9623	0.7737	0.9796
BENDR	0.8906	1.0880	0.9001	1.1510
MVTS	0.8097	0.9891	0.8187	1.0463
BrainBERT	0.7908	1.0045	0.7812	1.0039
PatchTST	0.4934	0.4753	0.5073	0.4896
TSTCC	0.7411	0.9201	0.7451	0.9488
TFC	0.7640	0.9486	0.7681	0.9781
CoST	*0.4964	*0.4783	*0.5088	*0.4914
BPT	0.4887	0.4622	0.5020	0.4835

Table 3: Performance on the seizure detection task on two public datasets.

Task & Dataset Model	Seizure detection									
	MAYO					FNUSA				
	Acc.	Prec.	Rec.	F1	F2	Acc.	Prec.	Rec.	F1	F2
Spec Power	58.79	38.77	44.27	41.34	43.05	58.08	38.48	46.42	42.08	44.58
Rhythm Spec	58.06	31.23	*45.06	36.89	41.39	56.27	30.53	47.64	37.21	42.84
aEEG	58.36	31.19	43.98	36.50	40.65	57.83	36.52	38.70	37.58	38.25
SEEG-Net	57.92	38.38	<u>46.72</u>	*42.14	<u>44.77</u>	58.21	39.12	*49.29	*43.62	*46.85
RP	86.51	46.19	20.29	28.20	22.86	70.19	<u>59.29</u>	19.88	29.78	22.93
TS	72.55	48.72	17.72	25.98	20.30	69.00	52.88	22.64	31.70	25.56
CPC	*87.29	52.90	24.01	33.03	26.96	68.34	50.40	24.98	33.40	27.78
BENDR	80.95	23.95	21.11	22.44	21.62	62.28	5.70	34.04	9.76	17.06
MVTS	69.19	<u>53.30</u>	24.99	34.03	27.96	67.11	49.66	19.68	28.19	22.38
BrainBERT	85.39	44.13	44.92	<u>44.52</u>	*44.76	68.31	44.96	<u>49.50</u>	<u>47.12</u>	<u>48.52</u>
PatchTST	<u>87.39</u>	53.02	29.42	37.84	32.29	*69.94	*55.81	26.08	35.55	29.19
TSTCC	77.26	10.47	9.16	9.77	9.40	63.83	24.40	11.36	15.50	12.71
TFC	82.09	11.41	4.91	6.87	5.54	68.71	29.36	5.05	8.62	6.05
CoST	<u>87.39</u>	*53.02	29.42	37.84	32.29	65.92	36.34	33.65	34.95	34.16
BPT	89.40	58.78	70.80	64.23	68.02	83.51	83.60	54.18	65.75	58.28

Table 4: Results of ablation experiments.

Task Model	Short-term forecasting		Long-term forecasting		Freq-ph forecasting		Imputation		Seizure detection				
	MAE	MSE	MAE	MSE	ph. PLV	freq. MAE	MAE	MSE	Acc.	Prec.	Rec.	F1	F2
BPT-temporal	0.5356	0.7021	0.5777	0.7876	0.5800	0.0094	0.2798	0.1797	88.56	67.39	40.25	50.40	43.78
BPT-spatial	0.5403	0.7521	0.5827	0.7990	<u>0.5780</u>	<u>0.0092</u>	0.2770	0.1741	89.93	84.77	36.88	51.40	41.57
BPT-frequency	<u>0.4762</u>	<u>0.5676</u>	<u>0.5726</u>	<u>0.7741</u>	0.5645	0.0143	<u>0.2495</u>	<u>0.1406</u>	<u>90.16</u>	78.41	<u>44.03</u>	<u>56.39</u>	<u>48.26</u>
BPT	0.4007	0.4626	0.5693	0.7676	0.6004	0.0041	0.1912	0.0814	91.17	<u>79.25</u>	52.74	63.29	56.50