

Time Series Representation Learning with Supervised Contrastive Temporal Transformer

Supplementary

I. DATASETS

Full details of UCR datasets are provided in Table I.

TABLE I: Details of datasets from UCR Archive. **#Item** represents the number of **Item**

Datasets	#Train	#Test	Length	#Class	Type
Adiac	390	391	176	37	IMAGE
ArrowHead	36	175	251	3	IMAGE
Beef	30	30	470	5	SPECTRO
BeetleFly	20	20	512	2	IMAGE
BirdChicken	20	20	512	2	IMAGE
Car	60	60	577	4	SENSOR
CBF	30	900	128	3	SIMULATE
ChinaTown	20	345	24	2	TRAFFIC
ChlorCon	467	3840	166	3	SIMULATE
Coffee	28	28	286	2	SPECTRO
Crop	7200	16800	46	24	IMAGE
Diamond	16	306	345	4	IMAGE
DisPhaxOutAge	400	139	80	3	IMAGE
DisPhaxOutCor	600	276	80	2	IMAGE
DisPhaxTW	400	139	80	6	IMAGE
DodgerLoopWnd	20	138	288	2	SENSOR
Earthquakes	322	139	512	2	SENSOR
ECG200	100	100	96	2	ECG
ECG5000	500	4500	140	2	ECG
FaceAll	560	1690	131	14	IMAGE
FordA	3601	1320	500	2	SENSOR
GunPoint	50	150	150	2	MOTION
Ham	109	105	431	2	SPECTRO
Herring	64	64	512	2	IMAGE
InsecWing	220	1980	256	11	AUDIO
ItaPowerDmd	67	1029	24	2	SENSOR
Lightning7	70	73	319	7	SENSOR
Meat	60	60	448	3	SPECTRO
MedicalImages	381	760	99	10	IMAGE
MelbPedest	1194	2439	24	10	TRAFFIC
MidPhaxOutAge	400	154	80	3	IMAGE
MidPhaxTW	399	154	80	6	IMAGE
MoteStrain	20	1252	84	2	SENSOR
OliveOil	30	30	570	4	SPECTRO
Plane	105	105	144	7	SENSOR
PowerCon	180	180	144	2	DEVICE
ProxPhaxOutAge	400	205	80	3	IMAGE
ProxIIPhaxOutCor	600	291	80	2	IMAGE
ProxPhaxTW	400	205	80	6	IMAGE
SonyAISurface1	20	601	70	2	SENSOR
Strawberry	613	370	235	2	SPECTRO
SwedishLeaf	500	625	128	15	IMAGE
Wafer	1000	6164	152	2	SENSOR
Wine	57	54	234	2	SPECTRO
Yoga	300	3000	426	2	IMAGE

II. RESULT

Detailed results for Time Series Classification on UCR Archive are provided in Table II.

TABLE II: UCR Results (Accuracy). Development datasets are marked with *

Datasets	ST	Boss	HCOTE	TS-CHIEF	Rocket	ITime	SimCLR (modified)	TS2Vec	MLP	SCOTT (ours)
Adiac	0.7826	0.7647	0.8107	0.7980	0.7874	0.8363	0.6547	0.6572	0.5985	0.7775
ArrowHead	0.7371	0.8343	0.8628	0.8229	0.8051	0.8286	0.7943	0.8051	0.8171	0.8514
Beef	0.9000	0.8000	0.9333	0.7333	0.8333	0.7000	0.7667	0.7000	0.7667	0.9000
BeetleFly*	0.9000	0.9000	0.9500	0.9500	0.9000	0.8500	0.8500	0.8500	0.7500	1.0000
BirdChicken	0.8000	0.9500	0.8500	0.9000	0.9000	0.9500	0.8000	0.8000	0.6000	0.8500
Car	0.9167	0.8333	0.8667	0.8500	0.8917	0.9000	0.8333	0.6833	0.7333	0.8667
CBF	0.9744	0.9978	0.9989	0.9978	0.9999	0.9989	0.8689	0.9933	0.8611	0.9456
ChinaTown*	-	-	-	-	1.0000	-	0.9417	0.9796	0.9825	0.9854
ChlorCon*	0.6997	0.6609	0.7120	0.7206	0.8130	0.8753	0.7354	0.6938	0.6938	0.8974
Coffee	0.9643	1.0000	1.0000	1.0000	1.0000	1.0000	0.8667	0.9643	0.9643	1.0000
Crop	-	-	-	-	0.7502	-	0.7545	0.7295	0.6951	0.7680
Diamond	0.9248	0.9314	0.9412	0.9771	0.9703	0.9314	0.9412	0.7778	0.9706	0.9706
DisPhaxOutAge	0.7698	0.7482	0.7626	0.7410	0.7574	0.7266	0.7194	0.7266	0.7194	0.7698
DisPhaxOutCor	0.7754	0.7283	0.7717	0.7862	0.7678	0.7935	0.7246	0.7862	0.7536	0.7790
DisPhaxTW	0.6619	0.6763	0.6835	0.6835	0.7187	0.6763	0.6835	0.6475	0.6906	0.7266
DodgerLoopWnd	-	-	-	-	0.9725	-	0.8116	0.9493	0.7391	0.9855
Earthquakes	0.7410	0.7482	0.7482	0.7482	0.7482	0.7410	0.7266	0.7482	0.7410	0.7626
ECG200*	0.8300	0.8700	0.8500	0.8600	0.9060	0.9100	0.8500	0.8600	0.8200	0.9400
ECG5000	0.9438	0.9413	0.9462	0.9458	0.9470	0.9409	0.9422	0.9367	0.9058	0.9478
FaceAll	0.7787	0.7817	0.8030	0.8426	0.9475	0.8041	0.8148	0.7639	0.7598	0.8574
FordA	0.9712	0.9295	0.9644	0.9470	0.9449	0.9483	0.8023	0.9273	0.8333	0.9364
GunPoint*	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.8367	0.9667	0.9067	0.9733
Ham	0.6857	0.6667	0.6667	0.7143	0.7257	0.7143	0.6762	0.6667	0.6952	0.7428
Herring	0.6719	0.5469	0.6875	0.5781	0.6858	0.7031	0.5938	0.6094	0.5469	0.7344
InsecWing*	0.6268	0.5232	0.6551	0.6465	0.6566	0.6348	0.6204	0.6318	0.6359	0.6566
ItaPowerDmd	0.9475	0.9086	0.9631	0.9718	0.9691	0.9679	0.9417	0.9456	0.9602	0.9738
Lightning7	0.7260	0.6849	0.7397	0.7534	0.8219	0.8082	0.6986	0.7945	0.6575	0.7534
Meat*	0.8500	0.9000	0.9333	0.9000	0.9450	0.9500	0.8667	0.8500	0.9667	0.9667
MedicalImages	0.6697	0.7184	0.7776	0.7974	0.7975	0.7987	0.7237	0.7789	0.6842	0.7434
MelbPedest	-	-	-	-	0.9038	-	0.9524	0.9258	0.9020	0.9725
MidPhaxOutAge	0.6429	0.5455	0.5974	0.5909	0.5955	0.5325	0.5844	0.6234	0.5844	0.5974
MidPhaxTW	0.5195	0.5455	0.5714	0.5584	0.5558	0.5130	0.6169	0.5909	0.5779	0.6234
MoteStrain	0.8970	0.8786	0.9329	0.9441	0.9142	0.9034	0.8682	0.8618	0.8682	0.9105
OliveOil	0.9000	0.8667	0.9000	0.9000	0.9267	0.8667	0.8667	0.7000	0.7000	0.9333
Plane	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9524	0.9810	0.9619	0.9905
PowerCon*	-	-	-	-	0.9311	-	0.9274	0.9444	0.9833	1.0000
ProxPhaxOutAge	0.8439	0.8341	0.8585	0.8488	0.8551	0.8537	0.8341	0.8244	0.8537	0.8585
ProxPhaxOutCor	0.8832	0.8488	0.8797	0.8969	0.8990	0.9313	0.8763	0.8385	0.8625	0.8866
ProxPhaxTW	0.8049	0.8000	0.8146	0.8146	0.8161	0.7756	0.8098	0.7951	0.7756	0.8195
SonyAISurface1	0.8436	0.6323	0.7654	0.8270	0.9241	0.8835	0.7271	0.9101	0.6656	0.7854
Strawberry	0.9622	0.9757	0.9703	0.9676	0.9819	0.9838	0.8514	0.8649	0.9622	0.9865
SwedishLeaf	0.9280	0.9216	0.9536	0.9664	0.9659	0.9712	0.9104	0.8816	0.8464	0.9296
Wafer*	1.0000	0.9948	0.9994	1.0000	0.9983	0.9987	0.9945	0.9956	0.9938	0.9968
Wine	0.7963	0.7407	0.7778	0.8889	0.8074	0.6667	0.8333	0.5000	0.5926	0.9074
Yoga	0.8177	0.9183	0.9177	0.8483	0.9085	0.9057	0.8457	0.7277	0.7587	0.8573
Total Best	7	5	6	6	9	10	0	0	1	23
Average Rank	5.93	6.66	4.15	4.16	3.29	4.53	7.16	7.07	7.51	2.90