

Supplementary material for the paper titled
“Early classification of time series by
simultaneously optimizing the accuracy and
earliness”

Raw results for the ECTS method

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Dataset	<i>sup</i> = 0	<i>sup</i> = 0.05	<i>sup</i> = 0.1	<i>sup</i> = 0.2	<i>sup</i> = 0.4	<i>sup</i> = 0.8
50words	0.57	0.57	0.58	0.59	0.62	0.63
Adiac	0.40	0.60	0.60	0.60	0.60	0.61
Beef	0.50	0.50	0.50	0.50	0.50	0.50
CBF	0.85	0.85	0.85	0.85	0.86	0.85
ChlorineConcentration	0.62	0.65	0.65	0.65	0.65	0.65
CinC_ECG_torso	0.87	0.87	0.87	0.89	0.89	0.90
Coffee	0.75	0.75	0.75	0.71	0.75	0.79
Cricket_X	0.56	0.56	0.56	0.57	0.57	0.57
Cricket_Y	0.63	0.63	0.64	0.64	0.64	0.64
Cricket_Z	0.59	0.59	0.62	0.62	0.62	0.62
DiatomSizeReduction	0.80	0.80	0.80	0.80	0.80	0.78
ECG200	0.89	0.90	0.89	0.88	0.88	0.88
ECGFiveDays	0.62	0.62	0.62	0.72	0.78	0.80
FaceAll	0.76	0.76	0.77	0.73	0.73	0.71
FaceFour	0.82	0.82	0.82	0.82	0.82	0.77
FacesUCR	0.71	0.71	0.73	0.74	0.76	0.77
fh	0.75	0.75	0.78	0.77	0.78	0.78
Gun_Point	0.87	0.87	0.91	0.91	0.91	0.91
Haptics	0.37	0.37	0.37	0.37	0.37	0.37
InlineSkate	0.33	0.33	0.33	0.34	0.34	0.34
ItalyPowerDemand	0.94	0.94	0.96	0.95	0.96	0.96
Lighting2	0.70	0.70	0.70	0.75	0.75	0.75
Lighting7	0.58	0.58	0.58	0.55	0.58	0.58
MALLAT	0.85	0.85	0.85	0.85	0.88	0.88
MedicalImages	0.68	0.69	0.69	0.68	0.69	0.68
MoteStrain	0.88	0.88	0.88	0.88	0.87	0.86
OliveOil	0.90	0.90	0.90	0.90	0.90	0.87
OSULeaf	0.49	0.48	0.50	0.51	0.52	0.52
SonyAIBORobotSurface	0.69	0.69	0.69	0.71	0.69	0.69
SonyAIBORobotSurfaceII	0.85	0.85	0.85	0.85	0.85	0.85
StarLightCurves	0.15	0.85	0.85	0.85	0.85	0.85
SwedhLeaf	0.78	0.78	0.78	0.79	0.79	0.78
Symbols	0.81	0.81	0.81	0.81	0.81	0.85
synthetic_control	0.88	0.87	0.87	0.87	0.87	0.88
Trace	0.74	0.74	0.73	0.75	0.75	0.76
TwoLeadECG	0.73	0.73	0.73	0.73	0.74	0.75
Two_Patterns	0.86	0.90	0.91	0.91	0.91	0.91
uWaveGestureLibrary_X	0.73	0.74	0.74	0.74	0.74	0.74
uWaveGestureLibrary_Y	0.63	0.66	0.66	0.66	0.66	0.66
uWaveGestureLibrary_Z	0.65	0.65	0.65	0.65	0.65	0.65
wafer	0.99	0.99	0.99	0.99	1.00	1.00
WordsSynonyms	0.59	0.59	0.60	0.61	0.61	0.62
yoga	0.81	0.81	0.82	0.83	0.83	0.83
NIFEKG_Thorax1	0.81	0.82	0.82	0.82	0.82	0.82
NIFEKG_Thorax2	0.88	0.88	0.88	0.88	0.88	0.88

Table 1: Accuracy values for the ECTS loose method using different support values.

Dataset	<i>sup</i> = 0	<i>sup</i> = 0.05	<i>sup</i> = 0.1	<i>sup</i> = 0.2	<i>sup</i> = 0.4	<i>sup</i> = 0.8
50words	0.58	0.58	0.59	0.60	0.63	0.63
Adiac	0.61	0.61	0.61	0.60	0.61	0.61
Beef	0.53	0.53	0.53	0.53	0.53	0.53
CBF	0.85	0.85	0.85	0.85	0.86	0.85
ChlorineConcentration	0.62	0.65	0.65	0.65	0.65	0.65
CinC_ECG_torso	0.87	0.87	0.87	0.89	0.90	0.90
Coffee	0.79	0.79	0.79	0.75	0.75	0.79
Cricket_X	0.57	0.57	0.56	0.57	0.57	0.57
Cricket_Y	0.63	0.63	0.64	0.64	0.64	0.64
Cricket_Z	0.59	0.59	0.62	0.62	0.62	0.62
DiatomSizeReduction	0.80	0.80	0.80	0.80	0.80	0.78
ECG200	0.89	0.89	0.89	0.88	0.88	0.88
ECGFiveDays	0.62	0.62	0.62	0.72	0.78	0.80
FaceAll	0.74	0.74	0.74	0.72	0.71	0.71
FaceFour	0.77	0.77	0.77	0.77	0.77	0.77
FacesUCR	0.72	0.72	0.73	0.75	0.76	0.77
fh	0.75	0.75	0.77	0.78	0.78	0.78
Gun_Point	0.87	0.87	0.89	0.91	0.91	0.91
Haptics	0.37	0.37	0.37	0.37	0.37	0.37
InlineSkate	0.33	0.33	0.33	0.34	0.34	0.34
ItalyPowerDemand	0.94	0.94	0.96	0.95	0.96	0.96
Lighting2	0.70	0.70	0.70	0.75	0.75	0.75
Lighting7	0.58	0.58	0.58	0.58	0.58	0.55
MALLAT	0.85	0.85	0.85	0.85	0.88	0.88
MedicalImages	0.68	0.69	0.69	0.68	0.69	0.68
MoteStrain	0.88	0.88	0.88	0.88	0.87	0.87
OliveOil	0.90	0.90	0.90	0.90	0.90	0.87
OSULeaf	0.49	0.48	0.49	0.50	0.52	0.52
SonyAIBORobotSurface	0.69	0.69	0.69	0.71	0.69	0.69
SonyAIBORobotSurfaceII	0.84	0.84	0.84	0.84	0.84	0.85
StarLightCurves	0.85	0.85	0.85	0.85	0.85	0.85
SwedhLeaf	0.79	0.79	0.78	0.79	0.79	0.79
Symbols	0.83	0.83	0.83	0.83	0.84	0.87
synthetic_control	0.89	0.88	0.88	0.88	0.88	0.88
Trace	0.74	0.74	0.74	0.74	0.76	0.76
TwoLeadECG	0.73	0.73	0.73	0.73	0.74	0.75
Two_Patterns	0.86	0.90	0.91	0.91	0.91	0.91
uWaveGestureLibrary_X	0.73	0.74	0.74	0.74	0.74	0.74
uWaveGestureLibrary_Y	0.63	0.66	0.66	0.66	0.66	0.66
uWaveGestureLibrary_Z	0.65	0.65	0.65	0.65	0.65	0.65
wafer	0.99	0.99	0.99	0.99	1.00	1.00
WordsSynonyms	0.59	0.59	0.60	0.61	0.61	0.62
yoga	0.81	0.81	0.82	0.83	0.83	0.83
NIFEKG_Thorax1	0.82	0.82	0.83	0.83	0.83	0.83
NIFEKG_Thorax2	0.88	0.88	0.88	0.88	0.88	0.88

Table 2: Accuracy values for the ECTS strict method using different support values.

Dataset	<i>sup</i> = 0	<i>sup</i> = 0.05	<i>sup</i> = 0.1	<i>sup</i> = 0.2	<i>sup</i> = 0.4	<i>sup</i> = 0.8
50words	72.86	74.40	76.39	79.42	89.69	98.83
Adiac	59.09	59.09	59.09	67.83	85.37	90.02
Beef	76.50	76.50	76.50	76.50	92.75	92.75
CBF	71.50	71.50	71.50	75.88	96.19	100.00
ChlorineConcentration	66.07	99.86	100.00	100.00	100.00	100.00
CinC_ECG_torso	0.58	58.20	58.20	59.01	68.15	100.00
Coffee	83.94	83.94	83.94	85.45	86.44	91.41
Cricket_X	71.80	71.80	86.90	95.75	98.01	100.00
Cricket_Y	66.49	66.49	90.5	97.69	98.52	100.00
Cricket_Z	67.86	67.93	88.10	96.20	99.42	100.00
DiatomSizeReduction	14.88	14.88	14.88	14.88	14.89	29.37
ECG200	60.11	67.41	71.73	74.25	74.25	75.10
ECGFiveDays	63.82	63.82	63.82	75.72	92.33	100.00
FaceAll	63.85	63.85	77.05	90.09	91.95	99.36
FaceFour	72.26	72.26	72.26	72.26	78.70	97.68
FacesUCR	87.21	87.21	89.04	92.53	96.34	98.25
fh	60.94	60.94	69.12	83.67	87.16	92.61
Gun_Point	46.92	46.92	62.83	65.13	66.23	100.00
Haptics	93.87	93.87	99.47	100.00	100.00	100.00
InlineSkate	85.08	85.08	85.08	95.42	95.85	100.00
ItalyPowerDemand	79.33	79.33	85.33	91.87	97.32	100.00
Lighting2	89.01	84.83	85.68	98.56	100.00	100.00
Lighting7	86.97	86.97	86.97	91.30	93.96	95.44
MALLAT	69.32	69.32	69.32	69.40	75.54	76.41
MedicalImages	53.87	77.04	82.25	95.36	97.95	100.00
MoteStrain	79.06	79.06	79.06	79.06	90.70	91.48
OliveOil	87.34	87.34	87.34	87.34	88.00	93.75
OSULeaf	76.59	79.49	93.20	98.63	100.00	100.00
SonyAIBORobotSurface	68.49	68.49	68.49	82.12	89.94	93.74
SonyAIBORobotSurfaceII	54.54	54.54	54.54	54.54	57.78	57.78
StarLightCurves	82.25	95.69	96.34	96.42	96.74	96.74
SwedhLeaf	76.27	76.66	88.84	94.15	96.05	97.74
Symbols	51.30	51.30	51.30	51.30	51.33	61.45
synthetic_control	87.88	91.27	94.48	95.25	95.71	98.65
Trace	50.72	50.72	68.23	80.78	86.04	100.00
TwoLeadECG	64.43	64.43	64.43	84.00	84.27	100.00
Two_Patterns	86.52	98.86	99.88	99.92	100.00	100.00
uWaveGestureLibrary_X	85.98	96.48	98.22	98.53	98.91	99.21
uWaveGestureLibrary_Y	86.29	97.85	98.31	99.31	99.61	100.00
uWaveGestureLibrary_Z	85.03	97.40	99.10	99.72	100.00	100.00
wafer	44.38	55.59	55.81	68.96	72.45	100.00
WordsSynonyms	82.51	83.96	89.16	92.53	96.21	100.00
yoga	69.41	91.56	96.45	100.00	100.00	100.00
NIFEKG_Thorax1	78.22	82.50	87.90	89.55	90.74	91.26
NIFEKG_Thorax2	76.84	81.87	88.08	90.47	91.84	93.64

Table 3: Earliness values for the ECTS loose method using different support values.

Dataset	<i>sup</i> = 0	<i>sup</i> = 0.05	<i>sup</i> = 0.1	<i>sup</i> = 0.2	<i>sup</i> = 0.4	<i>sup</i> = 0.8
50words	77.10	78.89	80.53	84.70	92.43	98.95
Adiac	64.05	64.05	64.05	72.95	89.26	93.68
Beef	77.67	77.67	77.67	77.67	86.74	96.94
CBF	71.50	71.67	71.67	76.05	95.15	100.00
ChlorineConcentration	67.01	99.76	99.97	100.00	100.00	100.00
CinC_ECG_torso	59.91	59.91	59.91	60.80	70.82	100.00
Coffee	84.93	84.93	84.93	86.44	86.44	91.41
Cricket_X	73.26	73.26	89.38	96.94	98.77	99.41
Cricket_Y	67.47	67.47	91.07	97.98	99.89	100.00
Cricket_Z	69.21	69.30	90.15	95.77	99.44	100.00
DiatomSizeReduction	14.88	14.88	14.88	14.88	14.89	29.37
ECG200	77.13	84.35	93.45	98.43	98.47	98.47
ECGFiveDays	63.82	63.82	63.82	75.72	91.65	100.00
FaceAll	68.25	68.25	83.88	94.76	96.53	98.36
FaceFour	89.51	89.51	89.51	89.51	97.12	97.68
FacesUCR	89.24	89.24	91.10	94.61	97.36	99.95
fh	65.81	65.81	76.22	87.33	91.38	98.06
Gun_Point	46.92	46.92	60.02	65.13	66.23	100.00
Haptics	93.90	93.90	99.61	100.00	100.00	100.00
InlineSkate	86.42	86.42	86.42	94.78	96.90	100.00
ItalyPowerDemand	79.33	79.33	85.33	91.87	97.32	100.00
Lighting2	89.01	84.83	85.68	98.56	99.64	100.00
Lighting7	86.98	86.98	86.97	86.98	86.97	91.00
MALLAT	69.32	69.32	69.32	69.40	75.54	76.41
MedicalImages	54.85	77.32	81.56	95.06	97.91	100.00
MoteStrain	84.86	84.86	84.86	84.86	97.23	97.23
OliveOil	87.34	87.34	87.34	87.34	88.00	93.75
OSULeaf	78.20	82.49	94.44	97.89	99.95	100.00
SonyAIBORobotSurface	68.49	68.49	68.49	82.12	89.94	93.74
SonyAIBORobotSurfaceII	55.81	55.81	55.81	55.81	57.12	57.78
StarLightCurves	82.83	96.21	96.47	96.59	96.6	96.74
SwedhLeaf	77.63	78.02	90.06	95.05	97.28	99.68
Symbols	46.23	46.23	46.23	46.23	49.33	55.73
synthetic_control	89.97	94.33	98.00	98.35	99.46	99.68
Trace	51.98	51.98	70.88	77.83	91.18	100.00
TwoLeadECG	64.43	64.43	64.43	84.00	84.27	100.00
Two_Patterns	86.79	98.90	99.74	99.92	100.00	100.00
uWaveGestureLibrary_X	86.90	97.79	98.89	99.04	99.49	100.00
uWaveGestureLibrary_Y	86.91	98.62	99.13	99.41	99.62	100.00
uWaveGestureLibrary_Z	85.98	98.10	99.48	99.67	100.00	100.00
wafer	44.38	55.59	55.81	68.96	72.45	100.00
WordsSynonyms	83.40	85.27	90.44	93.93	96.50	100.00
yoga	70.74	91.62	96.82	100.00	100.00	100.00
NIFEKG_Thorax1	81.54	85.99	91.82	93.67	94.34	95.29
NIFEKG_Thorax2	79.83	85.31	91.15	93.18	94.90	96.68

Table 4: Earliness values for the ECTS strict method using different support values.