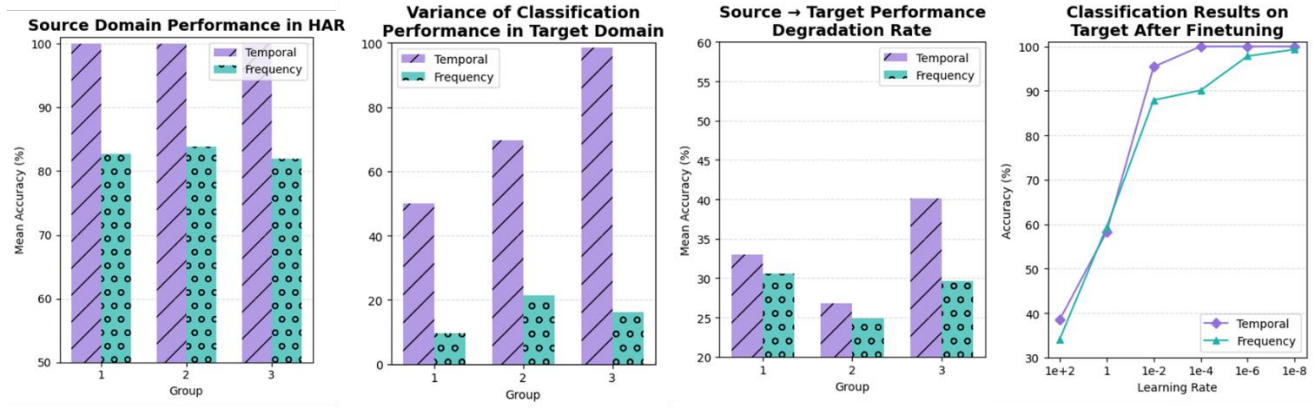


Supplementary Materials

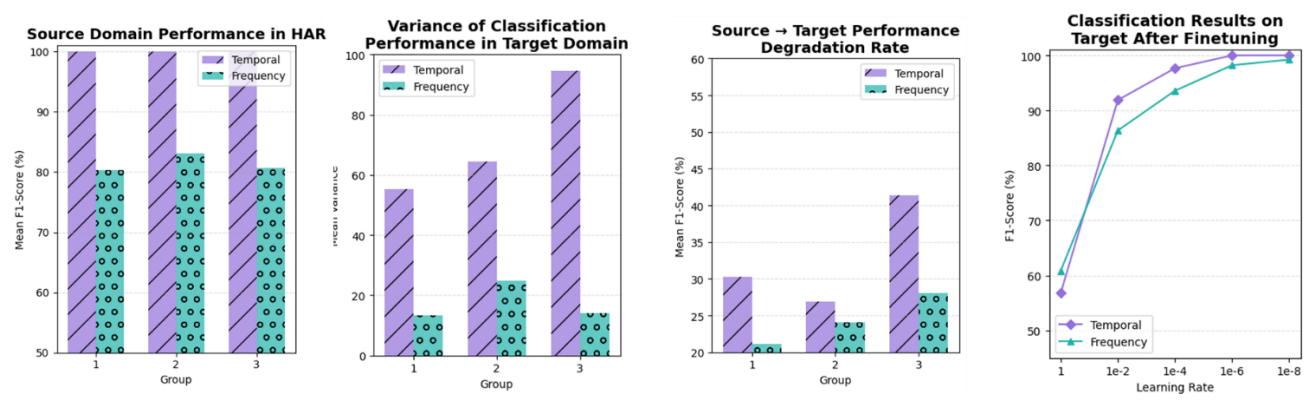
1. Preliminary Experiments on 5 datasets

Preliminary experiments were conducted on five datasets, with results reported in terms of accuracy and F1 score below:

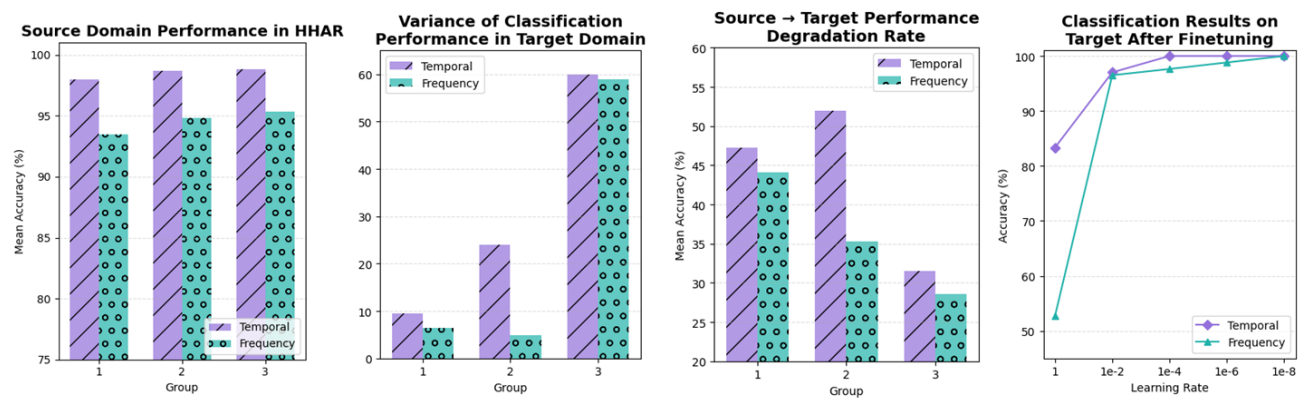
(1) HAR Dataset (metrics: Accuracy)



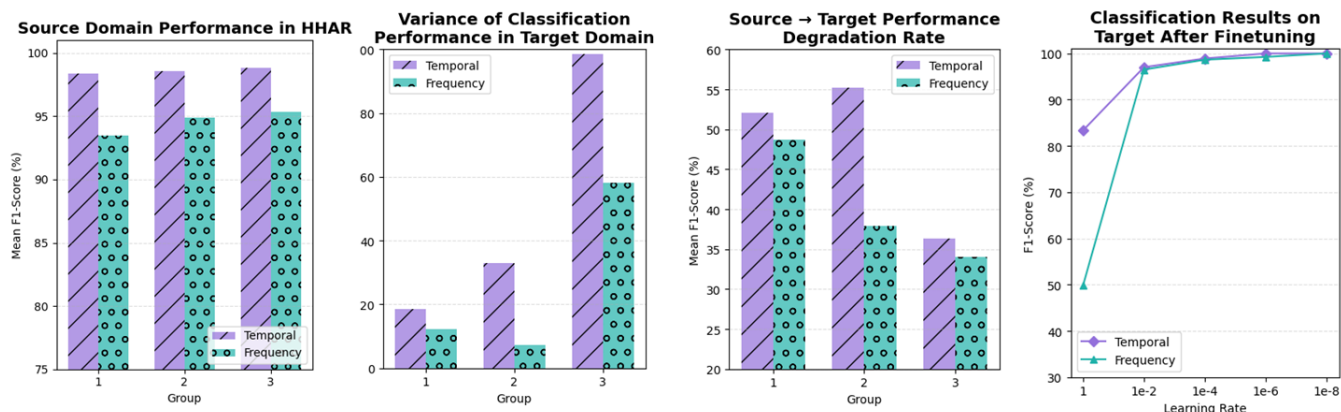
(2) HAR Dataset (metrics: F1-score)



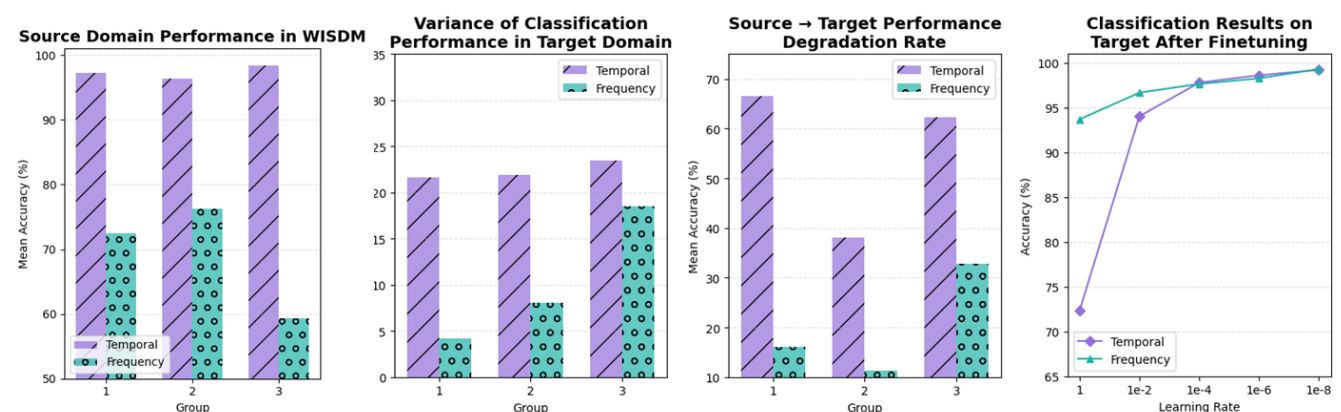
(3) HHAR Dataset (metrics: Accuracy)



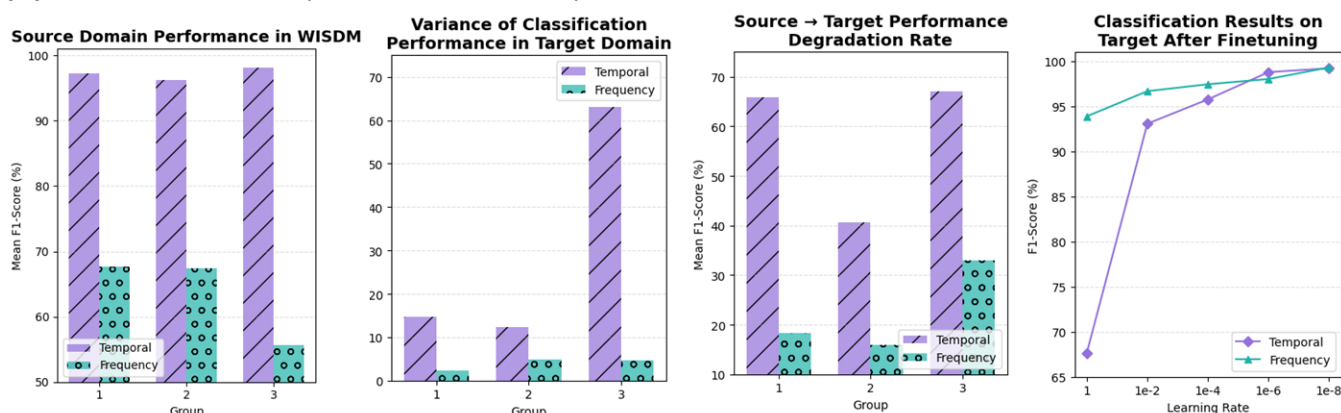
(4) HHAR Dataset (metrics: F1-score)



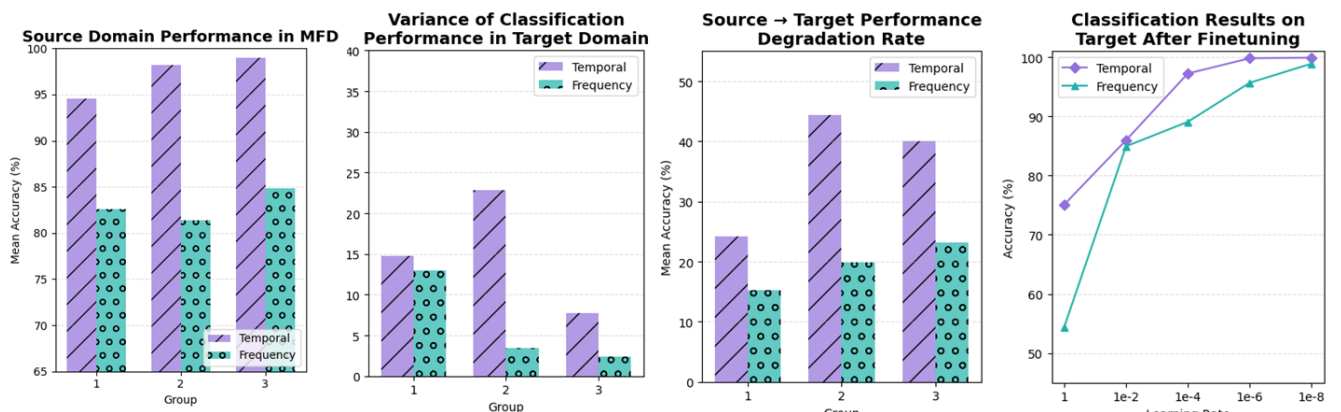
(5) WISDM Dataset (metrics: Accuracy)



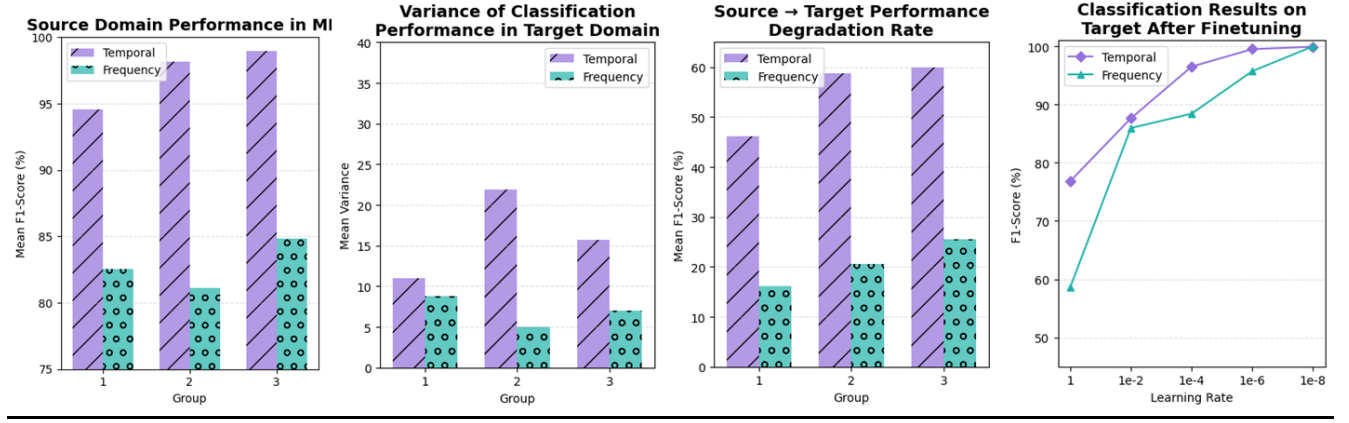
(6) WISDM Dataset (metrics: F1-score)



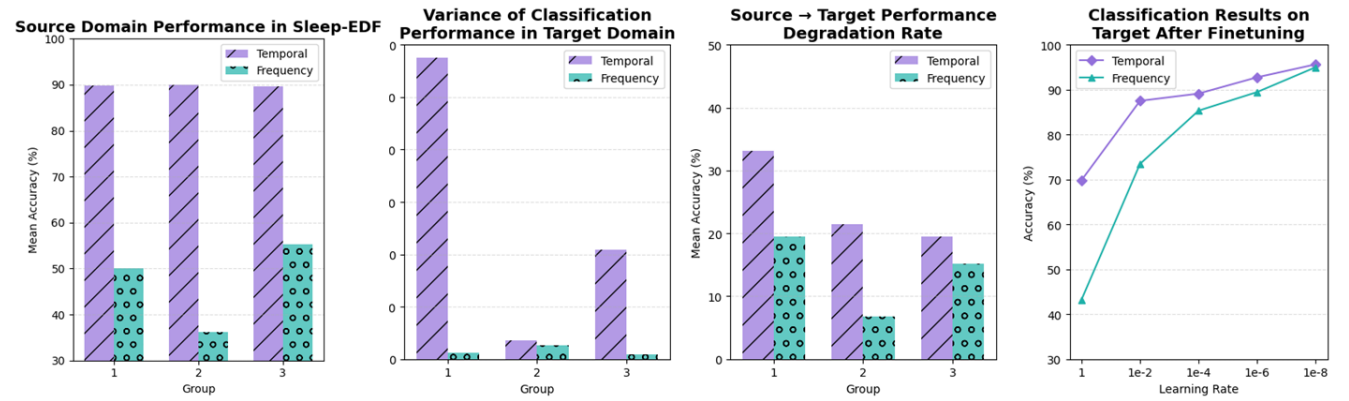
(7) MFD Dataset (metrics: Accuracy)



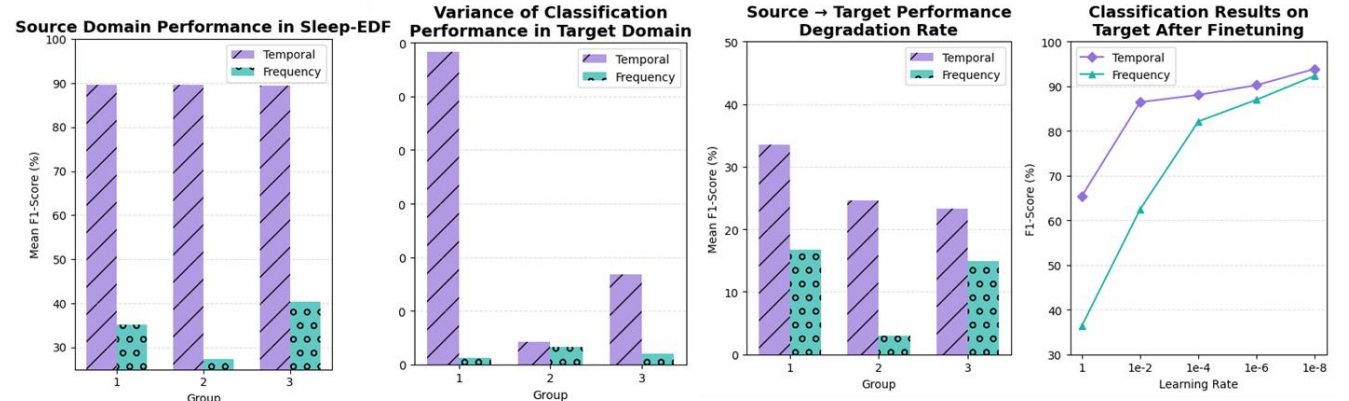
(8) MFD Dataset (metrics: F1-score)



(9) Sleep-EDF Dataset (metrics: Accuracy)



(10) Sleep-EDF Dataset (metrics: F1-score)



2. Ablation Study on 5 datasets

We have conducted ablation studies using five datasets, presenting the results in terms of mean accuracy and mean macro F1 score. In the table, the first column labels (A) to (E) correspond to the settings in Table 1 of the manuscript. To enhance readability, we have also included descriptions of these labels in the table caption.

	HAR	HHAR	WISDM	MFD	Sleep-EDF	AVG.
(A)	76.23	78.68	66.84	80.66	76.7	75.82
(B)	65.53	74.08	57.93	64.3	59.2	65.21
(C)	84	91.48	76.46	85.84	78.52	83.26
(D)	71.11	86.76	71.64	84.06	67.28	74.77
(E)	86.56	96.98	86.59	92.92	79.16	88.44

Table A: The ablation study of TidalFlow, where performance is measured in terms of accuracy (%). In the table, the first column labels (A) to (E) correspond to the settings in Table 1 of the manuscript and are defined as follows: **(A)** without {Dissimilarity Loss, Voting}, **(B)** without {Frequency Block, Dissimilarity Loss}, **(C)** without {Voting}, **(D)** without {Dissimilarity Loss}, and **(E)** without any modifications.

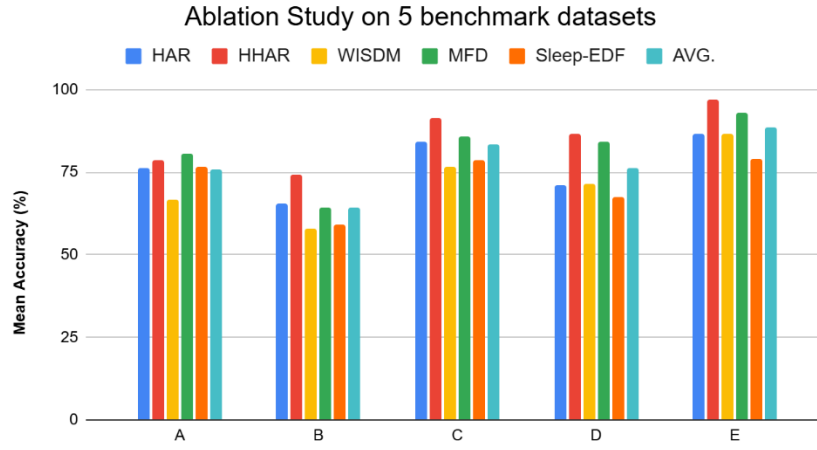


Figure A: The ablation study of TidalFlow, where performance is measured in terms of accuracy (%). On the horizontal axis of the chart, labels (A) to (E) correspond to the settings in Table 1 of the manuscript and are defined as follows: **(A)** without {Dissimilarity Loss, Voting}, **(B)** without {Frequency Block, Dissimilarity Loss}, **(C)** without {Voting}, **(D)** without {Dissimilarity Loss}, and **(E)** without any modifications.

	HAR	HHAR	WISDM	MFD	Sleep-EDF	AVG.
(A)	0.63	0.73	0.6	0.573	0.59	0.62
(B)	0.47	0.56	0.46	0.542	0.47	0.5
(C)	0.79	0.87	0.69	0.796	0.68	0.77
(D)	0.76	0.81	0.62	0.61	0.64	0.69
(E)	0.86	0.98	0.7	0.94	0.73	0.84

Table B: The ablation study of TidalFlow, where performance is measured in terms of macro F1 score. In the table, the first column labels (A) to (E) correspond to the settings in Table 1 of the manuscript and are defined as follows: **(A)** without {Dissimilarity Loss, Voting}, **(B)** without {Frequency Block, Dissimilarity Loss}, **(C)** without {Voting}, **(D)** without {Dissimilarity Loss}, and **(E)** without any modifications.

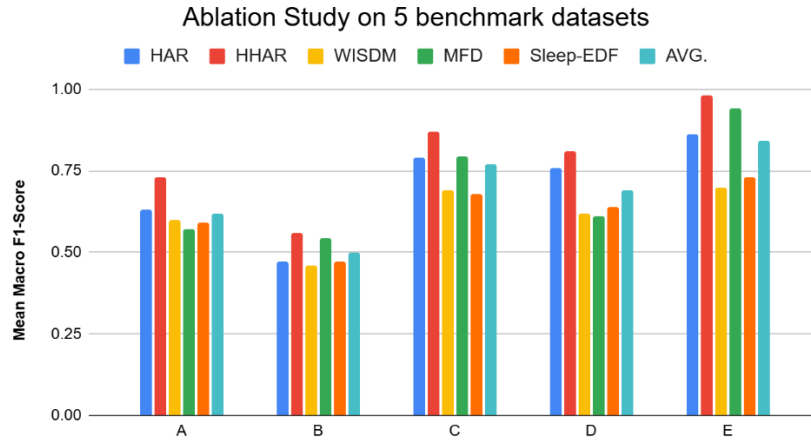


Figure B: The ablation study of TidalFlow, where performance is measured in terms of macro F1 score. On the horizontal axis of the chart, labels (A) to (E) correspond to the settings in Table 1 of the manuscript and are defined as follows: **(A)** without {Dissimilarity Loss, Voting}, **(B)** without {Frequency Block, Dissimilarity Loss}, **(C)** without {Voting}, **(D)** without {Dissimilarity Loss}, and **(E)** without any modifications.

3. Voting / Averaging / Summing Strategies Comparisons

	HAR	HHAR	WISDM	MFD	Sleep-EDF
Voting	86.56	96.98	86.59	93.53	79.16
Averaging	71.51	73.43	71.32	75.45	60.08
Summing	67.76	62.45	77.32	78.22	61.11

Table C: The performance is measured in terms of accuracy (%).

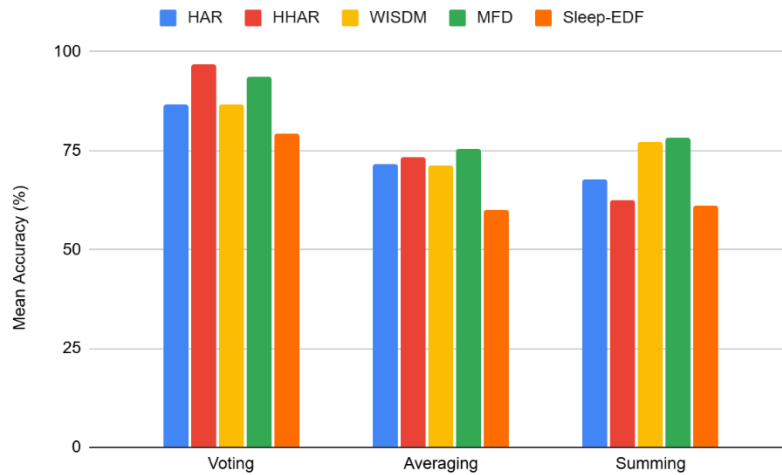


Figure C: The performance is measured in terms of accuracy (%).

	HAR	HHAR	WISDM	MFD	Sleep-EDF
Voting	0.86	0.98	0.7	0.95	0.73
Averaging	0.67	0.69	0.6	0.74	0.56
Summing	0.62	0.75	0.61	0.78	0.64

Table D: The performance is measured in terms of macro F1 score.

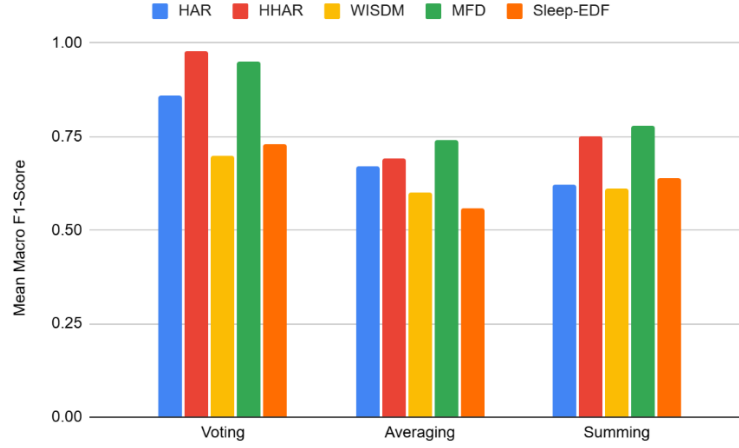


Figure D: The performance is measured in terms of macro F1 score.

4. Sensitivity Analysis

We conducted sensitivity analyses on the top K used in inference, as well as on α and β . These experiments were also carried out on five datasets, with the results presented in terms of accuracy and macro F1 score.

We noticed that the manuscript uses the variable name K twice, which may cause confusion. We will make adjustments to clarify this in a future revision.

(1) Top K

K	HAR	HHAR	WISDM	MFD	Sleep-EDF
3	72.47	83.97	66.02	73.64	71.04
5	86.56	96.98	86.59	93.53	79.16
8	66.46	75.94	59.17	63.21	62.18
10	52.04	66.58	61.87	58.66	58.29
12	49.9	61.76	67.36	59.43	57.17

Table E: The performance is measured in terms of accuracy (%) for different values of Top K .

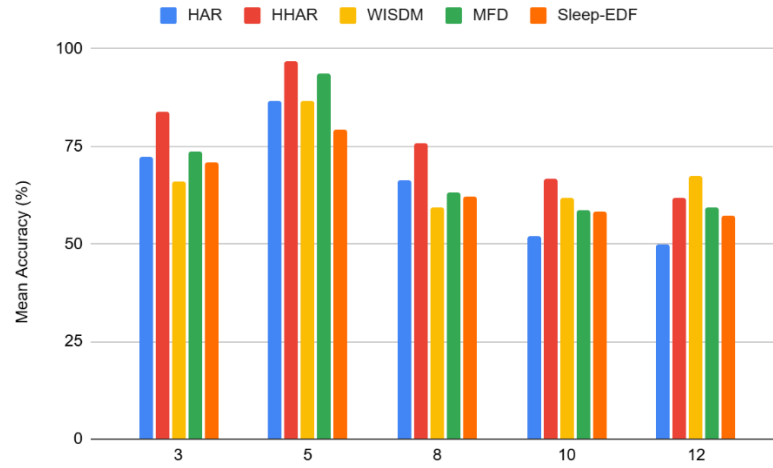


Figure E: The performance is measured in terms of accuracy (%) for different values of Top K .

K	HAR	HHAR	WISDM	MFD	Sleep-EDF
3	0.6	0.79	0.67	0.67	0.57
5	0.86	0.98	0.7	0.95	0.73
8	0.43	0.66	0.56	0.49	0.51
10	0.44	0.49	0.49	0.48	0.5
12	0.4	0.47	0.47	0.52	0.5

Table F: The performance is measured in terms of macro F1 score for different values of Top K .

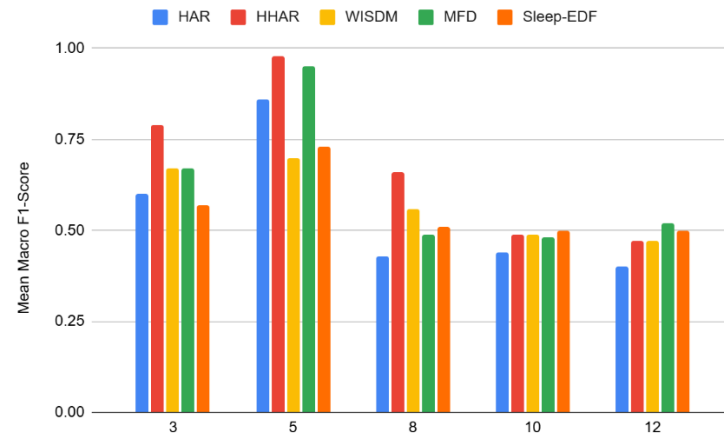


Figure F: The performance is measured in terms of macro F1 score for different values of Top K .

(2) α

α	HAR	HHAR	WISDM	MFD	Sleep-EDF
0.3	65.73	79.42	62.93	49.55	75.7
0.5	65.22	73.14	61.04	49.39	76.01
0.7	67.13	69.58	67.78	44.84	55.26
1	86.56	96.98	86.59	93.53	79.16

Table G: The performance is measured in terms of accuracy (%) for different values of α .

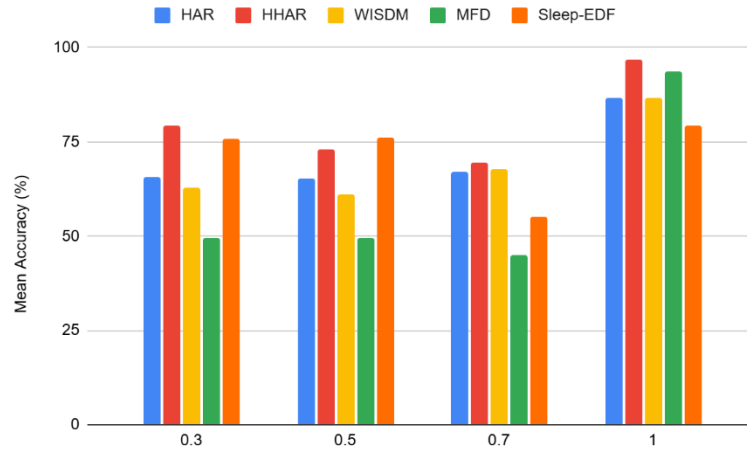


Figure G: The performance is measured in terms of accuracy (%) for different values of α .

α	HAR	HHAR	WISDM	MFD	Sleep-EDF
0.3	0.5	0.48	0.41	0.28	0.54
0.5	0.59	0.53	0.45	0.48	0.52
0.7	0.38	0.47	0.53	0.46	0.39
1	0.86	0.98	0.7	0.95	0.73

Table H: The performance is measured in terms of macro F1 score for different values of α .

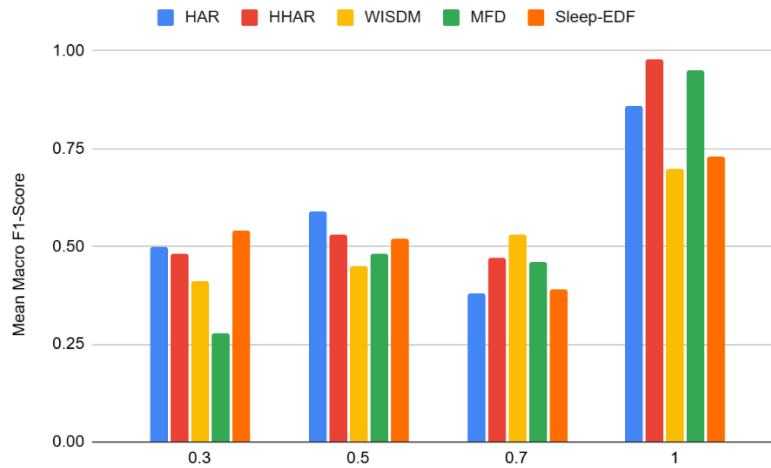


Figure H: The performance is measured in terms of macro F1 score for different values of α .

(3) β

β	HAR	HHAR	WISDM	MFD	Sleep-EDF
0.3	72.47	75.27	69.41	63.48	74.2
0.5	69.23	75.53	65.79	62.68	72.45
0.7	85.99	73.47	73.5	62.04	72.03
1	86.56	96.98	86.59	93.53	79.16

Table I: The performance is measured in terms of accuracy (%) for different values of β .

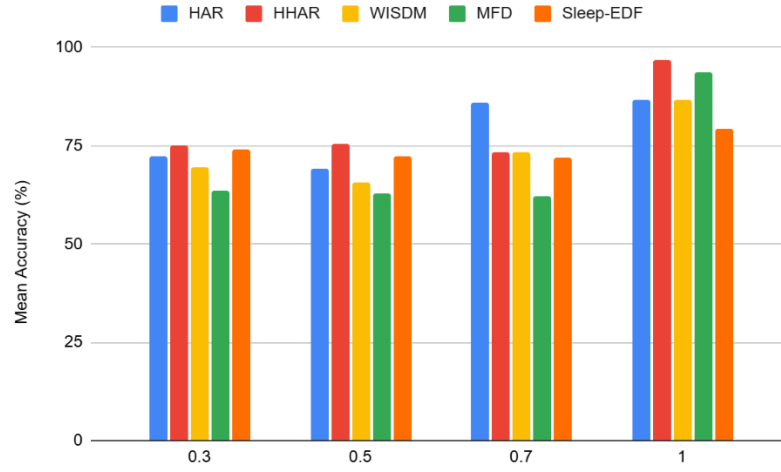


Figure I: The performance is measured in terms of accuracy (%) for different values of β .

β	HAR	HHAR	WISDM	MFD	Sleep-EDF
0.3	0.48	0.73	0.54	0.55	0.53
0.5	0.5	0.77	0.56	0.51	0.56
0.7	0.61	0.7	0.61	0.76	0.63
1	0.86	0.98	0.7	0.95	0.73

Table J: The performance is measured in terms of macro F1 score for different values of β .

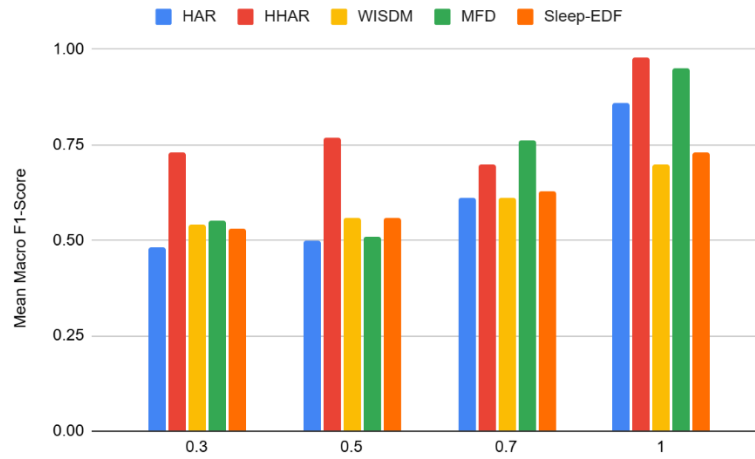


Figure J: The performance is measured in terms of macro F1 score for different values of β .