

Window size: 1024

Stride: 256

Only use channels LEFT_TA, LEFT_TS, RIGHT_TA, RIGHT_TS.

No scale on raw signal. Not shuffle and pick the last 20% data of each labels out for validation. Shuffle and split the rest to 80% for training and 20% for test.

Use discrete wavelet transform on raw data and resample approximation coefficients to make its size as same as details coefficients. Then get data with dimension [N,C,L,D].

N: number of the data

D: size of the output of discrete wavelet transform

L: length of details coefficients

C: number of channels

Feed the data to 1D CNN model.

No detrend:

Train (acc 1.000)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	277	0	0
Actual 2	0	605	0
Actual 6	0	0	392

Test (acc 0.987)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	67	1	0
Actual 2	3	141	0
Actual 6	0	0	107

Last 20% (acc 0.809)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	61	20	7
Actual 2	15	174	6
Actual 6	8	22	96

With detrend(lambda: 300):

Train (acc 1.000)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	277	0	0
Actual 2	0	605	0
Actual 6	0	0	392

Test (acc 0.990)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	66	2	0
Actual 2	0	144	0
Actual 6	1	0	106

Last 20% (acc 0.843)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	64	12	12
Actual 2	21	168	6
Actual 6	3	10	113

Parallel structure: feed raw data to the model, then the raw data will be directly processed by conv1d filter, signal rectification + conv1d, discrete wavelet transform + conv1d, fft + conv1d in parallel.

No detrend:

Train (acc 1.000)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	277	0	0
Actual 2	0	605	0
Actual 6	0	0	392

Test (acc 0.946)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	60	6	2
Actual 2	4	138	2
Actual 6	3	0	104

Last 20% (acc 0.804)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	55	19	14
Actual 2	16	168	11
Actual 6	8	12	106

With detrend(lambda: 300):

Train (acc 1.000)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	277	0	0
Actual 2	0	605	0
Actual 6	0	0	392

Test (acc 0.940)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	61	5	2
Actual 2	7	136	1
Actual 6	1	3	103

Last 20% (acc 0.767)

	Predicted 1	Predicted 2	Predicted 6
Actual 1	44	20	24
Actual 2	14	168	13
Actual 6	11	13	102