Window size:1024

Stride: 256

Raw data with detrend(lambda:300)

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.

Label: 2,6

Train (acc 0.997)

|  |  |  |
| --- | --- | --- |
|  | Predicted 2 | Predicted 6 |
| Actual 2 | 632 | 1 |
| Actual 6 | 2 | 398 |

Test (acc 0.980)

|  |  |  |
| --- | --- | --- |
|  | Predicted 2 | Predicted 6 |
| Actual 2 | 156 | 4 |
| Actual 6 | 1 | 98 |

Last 20% (acc 0.924)

|  |  |  |
| --- | --- | --- |
|  | Predicted 2 | Predicted 6 |
| Actual 2 | 191 | 16 |
| Actual 6 | 9 | 117 |

Label:1,6

Train (acc 0.998)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 6 |
| Actual 1 | 276 | 1 |
| Actual 6 | 0 | 398 |

Test (acc 0 946)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 6 |
| Actual 1 | 65 | 3 |
| Actual 6 | 6 | 95 |

Last 20% (acc 0.817)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 6 |
| Actual 1 | 58 | 30 |
| Actual 6 | 9 | 117 |

Label:1,2

Train (acc 0.989)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 2 |
| Actual 1 | 280 | 0 |
| Actual 2 | 10 | 620 |

Test (acc 0 942)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 2 |
| Actual 1 | 63 | 2 |
| Actual 2 | 11 | 152 |

Last 20% (acc 0.823)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 2 |
| Actual 1 | 68 | 20 |
| Actual 2 | 32 | 175 |

Label:1,2,6

Train (acc 0.996)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Predicted 1 | Predicted 2 | Predicted 6 |
| Actual 1 | 271 | 0 | 2 |
| Actual 2 | 1 | 639 | 1 |
| Actual 6 | 0 | 0 | 395 |

Test (acc 0.978)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Predicted 1 | Predicted 2 | Predicted 6 |
| Actual 1 | 70 | 0 | 2 |
| Actual 2 | 4 | 148 | 0 |
| Actual 6 | 1 | 0 | 103 |

Last 20% (acc 0.838)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Predicted 1 | Predicted 2 | Predicted 6 |
| Actual 1 | 60 | 14 | 14 |
| Actual 2 | 16 | 178 | 13 |
| Actual 6 | 5 | 6 | 115 |

rate=0.2

kernel\_size=7

kernel\_size2=5

stride=1

reg=0

acti='relu'

input\_ = layers.Input(shape=X[:,:,[0,1,4,5]].shape[1:])

cnn1 = layers.Conv1D(256,kernel\_size,strides=stride,

kernel\_regularizer=regularizers.l2(reg),

padding='same')(input\_)

cnn1 = layers.Activation(acti)(cnn1)

cnn1 = layers.MaxPooling1D(2)(cnn1)

cnn1 = layers.Dropout(rate)(cnn1)

cnn2 = layers.Conv1D(128,kernel\_size,strides=stride,

kernel\_regularizer=regularizers.l2(reg),

padding='same')(cnn1)

cnn2 = layers.Activation(acti)(cnn2)

cnn2 = layers.BatchNormalization(momentum=0.8)(cnn2)

cnn2 = layers.MaxPooling1D(2)(cnn2)

cnn2 = layers.Dropout(rate)(cnn2)

cnn3 = layers.Conv1D(64,kernel\_size,strides=stride,

kernel\_regularizer=regularizers.l2(reg),

padding='same')(cnn2)

cnn3 = layers.Activation(acti)(cnn3)

cnn3 = layers.BatchNormalization(momentum=0.8)(cnn3)

cnn3 = layers.MaxPooling1D(2)(cnn3)

cnn3 = layers.Dropout(rate)(cnn3)

cnn4 = layers.Conv1D(32,kernel\_size2,strides=stride,

kernel\_regularizer=regularizers.l2(reg),

padding='same')(cnn3)

cnn4 = layers.Activation(acti)(cnn4)

cnn4 = layers.BatchNormalization(momentum=0.8)(cnn4)

cnn4 = layers.MaxPooling1D(2)(cnn4)

cnn4 = layers.Dropout(rate)(cnn4)

cnn5 = layers.Conv1D(16,kernel\_size,strides=stride,

kernel\_regularizer=regularizers.l2(reg),

padding='same')(cnn4)

cnn5 = layers.Activation(acti)(cnn5)

cnn5 = layers.BatchNormalization(momentum=0.8)(cnn5)

cnn5 = layers.MaxPooling1D(2)(cnn5)

cnn5 = layers.Dropout(rate)(cnn5)

cnn6 = layers.Conv1D(8,kernel\_size2,strides=stride,

kernel\_regularizer=regularizers.l2(reg),

padding='same')(cnn5)

cnn6 = layers.Activation(acti)(cnn6)

cnn6 = layers.BatchNormalization(momentum=0.8)(cnn6)

cnn6 = layers.MaxPooling1D(2)(cnn6)

cnn6 = layers.Dropout(rate)(cnn6)

cnn7 = layers.Conv1D(4,kernel\_size2,strides=stride,

kernel\_regularizer=regularizers.l2(reg),

padding='same')(cnn6)

cnn7 = layers.Activation(acti)(cnn7)

cnn7 = layers.BatchNormalization(momentum=0.8)(cnn7)

cnn7 = layers.MaxPooling1D(2)(cnn7)

cnn7 = layers.Dropout(rate)(cnn7)

flatten = layers.Flatten()(cnn7)

dropout = layers.Dropout(rate)(flatten)

output = layers.Dense(2,activation = 'softmax')(dropout)

model = Model(inputs=[input\_],outputs=[output])