Window size:1024

Stride: 512

Raw data with detrend(lambda:50)

Lowpass filter(300Hz)

Use all channels

Use standard scaler. No shuffle and split data into 20% for test, 20% for validation and 60% for training.

Feature: IEMG, SSI, WL, ZC, ku, SSC, WAMP, skew, Acti, AR, HIST, MF, MDF, MNF, mDWT.

Feature selection: VarianceThreshold(with 1).

model = xgb.XGBClassifier(max\_depth=4,

learning\_rate=0.1,

n\_estimators=200,

#eval\_metrics='error',

objective='binary:logistic',

scale\_pos\_weight = 50,

subsample=0.8,

reg\_lambda = 26,

)

Class 0 : others

Train (acc 0.994)

|  |  |  |
| --- | --- | --- |
|  | Predicted 0 | Predicted others |
| Actual 0 | 4546 | 27 |
| Actual others | 0 | 583 |

Valid (acc 0.984)

|  |  |  |
| --- | --- | --- |
|  | Predicted 0 | Predicted others |
| Actual 0 | 1523 | 21 |
| Actual others | 8 | 178 |

Test (acc 0.977)

|  |  |  |
| --- | --- | --- |
|  | Predicted 0 | Predicted others |
| Actual 0 | 1579 | 32 |
| Actual others | 8 | 187 |

model = SVC(kernel="rbf",C=10,

class\_weight={0:1,1:5},

gamma='auto'

)

PCA(component = 150)

Class 0 : others

Train (acc 0.977)

|  |  |  |
| --- | --- | --- |
|  | Predicted 0 | Predicted others |
| Actual 0 | 4467 | 106 |
| Actual others | 9 | 529 |

Valid (acc 0.978)

|  |  |  |
| --- | --- | --- |
|  | Predicted 0 | Predicted others |
| Actual 0 | 1518 | 26 |
| Actual others | 11 | 172 |

Test (acc 0.967)

|  |  |  |
| --- | --- | --- |
|  | Predicted 0 | Predicted others |
| Actual 0 | 1563 | 48 |
| Actual others | 11 | 184 |

Class 1 : 2 : 6

Train (acc 0.840)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Predicted 1 | Predicted 2 | Predicted 6 |
| Actual 1 | 84 | 17 | 19 |
| Actual 2 | 22 | 210 | 9 |
| Actual 6 | 13 | 6 | 158 |

Valid (acc 0.770)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Predicted 1 | Predicted 2 | Predicted 6 |
| Actual 1 | 9 | 10 | 22 |
| Actual 2 | 2 | 73 | 7 |
| Actual 6 | 0 | 1 | 59 |

Test (acc 0.747)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Predicted 1 | Predicted 2 | Predicted 6 |
| Actual 1 | 10 | 16 | 18 |
| Actual 2 | 4 | 82 | 3 |
| Actual 6 | 1 | 7 | 53 |

Class 2 : 6

Train (acc 0.940)

|  |  |  |
| --- | --- | --- |
|  | Predicted 2 | Predicted 6 |
| Actual 2 | 227 | 14 |
| Actual 6 | 11 | 166 |

Valid (acc 0.943)

|  |  |  |
| --- | --- | --- |
|  | Predicted 0 | Predicted 6 |
| Actual 0 | 75 | 7 |
| Actual 2 | 1 | 59 |

Test (acc 0.920)

|  |  |  |
| --- | --- | --- |
|  | Predicted 0 | Predicted 6 |
| Actual 0 | 85 | 4 |
| Actual 2 | 8 | 53 |

Class 1 : 6

Train (acc 0.882)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 6 |
| Actual 1 | 101 | 19 |
| Actual 6 | 16 | 161 |

Valid (acc 0.742)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 6 |
| Actual 1 | 15 | 26 |
| Actual 6 | 0 | 60 |

Test (acc 0.780)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 6 |
| Actual 1 | 23 | 21 |
| Actual 6 | 2 | 59 |

Class 1 : 2

Train (acc 0.867)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 2 |
| Actual 1 | 97 | 23 |
| Actual 2 | 25 | 216 |

Valid (acc 0.837)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 2 |
| Actual 1 | 25 | 16 |
| Actual 2 | 4 | 78 |

Test (acc 0.819)

|  |  |  |
| --- | --- | --- |
|  | Predicted 1 | Predicted 2 |
| Actual 1 | 24 | 20 |
| Actual 2 | 4 | 85 |