Table S1. ShallowConvNet

|  |  |  |
| --- | --- | --- |
| Description | Layers | Shape |
| Temporal filter | InputLayer | (None, 56, 480, 1) |
| Conv2D | (None, 56, 480, 8) |
| BatchNormalization | (None, 56, 480, 8) |
| Spatial filter(Convolution block 1) | DepthwiseConv2D | (None, 1, 480, 16) |
| BatchNormalization | (None, 1, 480, 16) |
| Activation ('relu') | (None, 1, 480, 16) |
| AveragePooling2D | (None, 1, 120, 16) |
| Dropout | (None, 1, 120, 16) |
| Spatial filter(Convolution block 2) | SeparableConv2D | (None, 1, 120, 16) |
| BatchNormalization | (None, 1, 120, 16) |
| Activation ('relu') | (None, 1, 120, 16) |
| AveragePooling2D | (None, 1, 15, 16) |
| Dropout | (None, 1, 15, 16) |
| Binary classifier | Flatten | (None, 240) |
| Dense | (None, 2) |
| Activation ('softmax') | (None, 2) |

Table S2. DeepConvNet

|  |  |  |
| --- | --- | --- |
| Description | Layers | Shape |
| Temporal filter | InputLayer | (None, 56, 480, 1) |
| Conv2D | (None, 56, 476, 25) |
| Spatial filter(Convolution block 1) | Conv2D | (None, 1, 476, 25) |
| BatchNormalization | (None, 1, 476, 25) |
| Activation ('elu') | (None, 1, 476, 25) |
| MaxPooling2D | (None, 1, 238, 25) |
| Dropout | (None, 1, 238, 25) |
| Spatial filter(Convolution block 2) | Conv2D | (None, 1, 234, 50) |
| BatchNormalization | (None, 1, 234, 50) |
| Activation ('elu') | (None, 1, 234, 50) |
| MaxPooling2D | (None, 1, 117, 50) |
| Dropout | (None, 1, 117, 50) |
| Spatial filter(Convolution block 3) | Conv2D | (None, 1, 113, 100) |
| BatchNormalization | (None, 1, 113, 100) |
| Activation ('elu') | (None, 1, 113, 100) |
| MaxPooling2D | (None, 1, 56, 100) |
| Dropout | (None, 1, 56, 100) |
| Spatial filter(Convolution block 4) | Conv2D | (None, 1, 52, 200) |
| BatchNormalization | (None, 1, 52, 200) |
| Activation ('elu') | (None, 1, 52, 200) |
| MaxPooling2D | (None, 1, 26, 200) |
| Dropout | (None, 1, 26, 200) |
| Binary classifier | Flatten | (None, 5200) |
| Dense | (None, 2) |
| Activation ('softmax') | (None, 2) |

Table S3. EEGNet

|  |  |  |
| --- | --- | --- |
| Description | Layers | Shape |
| Temporal filter | InputLayer | (None, 56, 480, 1) |
| Conv2D | (None, 56, 468, 40) |
| Spatial filter(Convolution block) | Conv2D | (None, 1, 468, 40) |
| BatchNormalization | (None, 1, 468, 40) |
| Activation ('elu') | (None, 1, 468, 40) |
| AveragePooling2D | (None, 1, 62, 40) |
| Activation ('elu') | (None, 1, 62, 40) |
| Dropout | (None, 1, 62, 40) |
| Binary classifier | Flatten | (None, 2480) |
| Dense | (None, 2) |
| Activation ('softmax') | (None, 2) |