**Approach 2: Averaged data EEG Classification – 70 features**

Theta:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | No scaling | | Standard Scaler | | -1 to 1 Feature Normalization | |
| Accuracies | Channels | Accuracies | Channels | Accuracies | Channels |
| **1** | **0.54 0.52444444 0.50444444 0.5 0.48444444]** | **13, 22, 41, 48, 15])** | **[0.62666667 0.62666667 0.56 0.54444444 0.51777778]** | **15, 23, 51, 13, 25])** | **[0.45777778 0.43777778 0.43777778 0.43777778 0.43777778]** | **20, 34, 51, 44, 30])** |
| **2** | **0.54222222 0.52222222 0.50444444 0.50222222 0.49777778]** | **[22, 54, 34, 45, 11])** | **[0.52222222 0.52 0.51555556 0.50888889 0.50444444]** | **23, 55, 40, 42, 34])** | **[0.52444444 0.47777778 0.45777778 0.45555556 0.43777778]** | **[52, 17, 7, 12, 14])** |
| **3** | **[0.52 0.51777778 0.50444444 0.50444444 0.5** | **34, 11, 19, 43, 22])** | **[0.62888889 0.54444444 0.54 0.52 0.51777778]** | **[11, 39, 54, 43, 24])** | **[0.58444444 0.48 0.47777778 0.43777778 0.43777778]** | **17, 20, 48, 11, 49])** |

Alpha:

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| --- | --- | --- | --- | --- | --- | --- |
| # | No scaling | | Standard Scaler | | -1 to 1 Feature Normalization | |
| Accuracies | Channels | Accuracies | Channels | Accuracies | Channels |
| **1** | **0.47777778 0.44222222 0.44222222 0.44 0.42]** | **51, 29, 36, 43, 37])** | **[0.52666667 0.52222222 0.51777778 0.51111111 0.5** | **14, 51, 26, 37, 36])** | **[0.5 0.45777778 0.43777778 0.41777778 0.41777778]  :** | **[29, 47, 19, 42, 15])** |
| **2** | **[0.43777778 0.42 0.41777778 0.41777778 0.41777778]** | **33, 29, 52, 39, 36])** | **[0.56666667 0.56222222 0.53111111 0.51555556 0.5** | **[37, 38, 2, 10, 35])** | **[0.47777778 0.45777778 0.42 0.41777778 0.41777778]** | **45, 54, 14, 7, 48])** |
| **3** | **[0.45555556 0.41777778 0.39777778 0.39555556 0.39333333]** | **[51, 9, 36, 29, 33])** | **[0.58222222 0.54444444 0.52 0.49555556 0.48444444]** | **[35, 1, 26, 14, 36])** | **[0.43777778 0.43777778 0.43777778 0.43777778 0.43777778]** | **3, 25, 16, 51, 36])** |

Beta:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | No scaling | | Standard Scaler | | -1 to 1 Feature Normalization | |
| Accuracies | Channels | Accuracies | Channels | Accuracies | Channels |
| **1** | **0.56 0.50444444 0.49777778 0.48222222 0.48** | **30, 35, 34, 7, 56])** | **[0.58666667 0.54 0.52 0.51777778 0.50222222]** | **30, 34, 58, 19, 14]** | **[0.56 0.49777778 0.49555556 0.47777778 0.43777778]** | **[30, 14, 25, 49, 33])** |
| **2** | **[0.66222222 0.54222222 0.54 0.51777778 0.48** | **30, 31, 34, 35, 1])** | **[0.54444444 0.54222222 0.54 0.52222222 0.52222222]** | **[30, 53, 12, 36, 1]** | **[0.53777778 0.47555556 0.43777778 0.43555556 0.43555556]** | **5, 32, 41, 30, 31])** |
| **3** | **[0.60666667 0.59777778 0.46222222 0.45777778 0.44** | **34, 30, 31, 32, 1])** | **[0.58444444 0.58444444 0.56 0.52666667 0.50444444]** | **43, 30, 14, 6, 27])** | **[0.53777778 0.51555556 0.48222222 0.46 0.45777778]** | **31, 57, 2, 28, 20])** |

Gamma:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | No scaling | | Standard Scaler | | -1 to 1 Feature Normalization | |
| Accuracies | Channels | Accuracies | Channels | Accuracies | Channels |
| **1** | **[0.43555556 0.41555556 0.41555556 0.41111111 0.39555556]** | **26, 47, 45, 55, 44])** | **[0.58444444 0.54 0.52 0.52 0.50222222]** | **[22, 35, 5, 34, 25])** | **[0.49555556 0.45777778 0.45555556 0.43777778 0.43777778]** | **1, 17, 13, 54, 16])** |
| **2** | **[0.48 0.43555556 0.42 0.40888889 0.39777778]** | **[ 8, 47, 56, 26, 54])** | **[0.54222222 0.52 0.51777778 0.50222222 0.50222222]** | **25, 20, 34, 12, 22])** | **[0.45777778 0.45333333 0.43777778 0.43555556 0.41777778]** | **17, 38, 43, 10, 20])** |
| **3** | **[0.43555556 0.41777778 0.41333333 0.39777778 0.37333333]** | **41, 23, 55, 17, 44])** | **[0.54666667 0.54444444 0.52222222 0.51777778 0.50444444]** | **[25, 22, 34, 10, 12])** | **[0.45777778 0.45777778 0.44 0.43777778 0.43555556]** | **30, 54, 46, 16, 33])** |

**Approach 2: Averaged data EEG Classification – 35 features**

Theta:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | No scaling | | Standard Scaler | | -1 to 1 Feature Normalization | |
| Accuracies | Channels | Accuracies | Channels | Accuracies | Channels |
| **1** | **[0.52 0.50444444 0.49777778 0.49777778 0.48 ]** | **[53, 39, 15, 8, 52])** | **[0.52222222 0.5 0.46222222 0.46222222 0.46** | **15, 45, 58, 8, 19])** | **[0.45777778 0.45777778 0.45777778 0.45777778 0.45777778]  ]** | **58, 47, 25, 31, 44])** |
| **2** | **[0.60444444 0.54222222 0.5 0.45333333 0.45333333]** | **41, 15, 52, 38, 23])** | **[0.48222222 0.47555556 0.47333333 0.46 0.46]** | **34, 43, 14, 25, 5])** | **[0.51555556 0.51555556 0.45555556 0.44222222 0.43777778]** | **21, 38, 13, 17, 36])** |
| **3** | **[0.56222222 0.52 0.51777778 0.47777778 0.43777778]** | **39, 43, 15, 37, 48])** | **[0.51555556 0.50222222 0.48222222 0.48 0.47777778]** | **33, 22, 48, 45, 49])** | **[0.51777778 0.46 0.45777778 0.45777778 0.43777778** | **50, 25, 34, 14, 58])** |

Alpha:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | No scaling | | Standard Scaler | | -1 to 1 Feature Normalization | |
| Accuracies | Channels | Accuracies | Channels | Accuracies | Channels |
| **1** | **[0.43777778 0.43555556 0.43555556 0.42 0.41777778]** | **49, 47, 54, 37, 40])** | **[0.54222222 0.48 0.44222222 0.43777778 0.41555556]** | **54, 40, 22, 37, 39])** | **[0.47777778 0.45777778 0.43777778 0.43777778 0.43555556]       :** | **31, 1, 12, 8, 30])** |
| **2** | **[0.49777778 0.43777778 0.41777778 0.41111111 0.39555556]** | **39, 43, 13, 37, 54])** | **[0.48888889 0.46222222 0.45555556 0.45333333 0.41777778]** | **37, 40, 16, 29, 54])** | **[0.43777778 0.43777778 0.43555556 0.43555556 0.41777778]** | **47, 16, 1, 7, 20])** |
| **3** | **[0.50444444 0.47777778 0.44 0.43555556 0.42 ]** | **[32, 29, 54, 12, 40])** | **[0.43777778 0.43333333 0.42222222 0.41555556 0.41333333]** | **12, 35, 29, 40, 11])** | **[0.45777778 0.43555556 0.43333333 0.41777778 0.41555556]** | **[29, 11, 33, 21, 51])** |

Beta:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | No scaling | | Standard Scaler | | -1 to 1 Feature Normalization | |
| Accuracies | Channels | Accuracies | Channels | Accuracies | Channels |
| **1** | **[0.45777778 0.44 0.41555556 0.39777778 0.39111111]** | **8, 52, 23, 11, 41])** | **[0.58222222 0.56 0.54444444 0.50222222 0.5** | **31, 30, 34, 21, 40])** | **[0.55777778 0.49555556 0.48222222 0.47555556 0.45777778]** | **35, 48, 29, 2, 43])** |
| **2** | **[0.41333333 0.39777778 0.39555556 0.39555556 0.39555556]** | **55, 23, 26, 56, 8])** | **[0.66666667 0.54444444 0.54 0.53555556 0.52444444]** | **30, 33, 34, 51, 17])** | **[0.48222222 0.47777778 0.47777778 0.46 0.45333333]** | **35, 7, 37, 1, 34])** |
| **3** | **[0.45777778 0.41777778 0.41777778 0.41555556 0.41333333]** | **23, 52, 47, 28, 8])** | **[0.58444444 0.54444444 0.54222222 0.54 0.52222222]** | **30, 16, 51, 40, 21])** | **[0.60666667 0.48222222 0.47555556 0.45333333 0.41777778]** | **5, 4, 30, 31, 38])** |

Gamma:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | No scaling | | Standard Scaler | | -1 to 1 Feature Normalization | |
| Accuracies | Channels | Accuracies | Channels | Accuracies | Channels |
| **1** | **[0.45777778 0.44 0.41555556 0.39777778 0.39111111]** | **[ 8, 52, 23, 11, 41])** | **[0.48222222 0.46 0.44 0.43777778 0.39777778]** | **[19, 41, 50, 57, 52])** | **[0.48 0.45777778 0.45777778 0.43777778 0.43777778]** | **[47, 30, 52, 19, 55])** |
| **2** | **[0.41333333 0.39777778 0.39555556 0.39555556 0.39555556]** | **[55, 23, 26, 56, 8])** | **[0.51777778 0.45555556 0.43111111 0.41777778 0.39777778]** | **55, 19, 12, 27, 20])** | **[0.52 0.45777778 0.43777778 0.41777778 0.41777778]** | **([47, 29, 10, 42, 11])** |
| **3** | **[0.45777778 0.41777778 0.41777778 0.41555556 0.41333333]** | **23, 52, 47, 28, 8])** | **[0.51777778 0.47555556 0.45777778 0.39777778 0.39777778]** | **[19, 27, 56, 10, 2])** | **[0.47777778 0.45777778 0.45777778 0.45777778 0.43777778]** | **38, 19, 57, 3, 40])** |