Isuru

1st step - merge\_dataset

* We have six different data sets and 10 users. When I get the 1st data set I meagre the 10 users and get that data in one file.
* Summarize the result in that 1st data set.

2nd step - feedforward\_tarin\_test\_merged\_dataset

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Hidden Layer Size,  Validation,  Parameters | Training Accuracy | Test Accuracy |  | Hidden Layer Size,  Validation,  Parameters | Training Accuracy | Test Accuracy |
| 1st | 20,10  70%, 15%, 15%  1000, 1e-6, 1e-7 | 100% | 83.33% | 6th | 60,15  70%, 15%, 15%  1000, 1e-6, 1e-7 | 100% | 68.52% |
| 2nd | 20,5  70%, 15%, 15%  1000, 1e-6, 1e-7 | 95.24% | 74.07% | 7th | 65,10  70%, 15%, 15%  1000, 1e-6, 1e-7 | 100% | 70.37% |
| 3rd | 25,10  70%, 15%, 15%  1000, 1e-6, 1e-7 | 38.10% | 25.93% | 8th | 65,15  70%, 15%, 15%  1000, 1e-6, 1e-7 | 100% | 70.37% |
| 4th | 60,10  70%, 15%, 15%  1000, 1e-6, 1e-7 | 100% | 79.63% | 9th | 65,5  70%, 15%, 15%  1000, 1e-6, 1e-7 | 100% | 83..33% |
| 5th | 60  70%, 15%, 15%  1000, 1e-6, 1e-7 | 98.41% | 61.11% | 10th | 65  70%, 15%, 15%  1000, 1e-6, 1e-7 | 56.35 % | 33.33% |

3rd step -optimization\_trained\_dataset

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Hidden Layer Size,  Validation,  Parameters | Validation Accuracy After PCA | Test (Optimization) Accuracy After PCA |  | Hidden Layer Size,  Validation,  Parameters | Validation Accuracy After PCA | Test (Optimization) Accuracy After PCA |
| 1st | 20,10  70%, 15%, 15%  1000, 1e-6, 1e-7 | 70.37% | 85.19% | 6th | 60,15  70%, 15%, 15%  1000, 1e-6, 1e-7 | 72.22% | 61.11% |
| 2nd | 20,570%, 15%, 15%  1000, 1e-6, 1e-7 | 87.04% | 85.19% | 7th | 65,10  70%, 15%, 15%  1000, 1e-6, 1e-7 | 66.67% | 68.52% |
| 3rd | 25,1070%, 15%, 15%  1000, 1e-6, 1e-7 | 72.22% | 81.48% | 8th | 65,15  70%, 15%, 15%  1000, 1e-6, 1e-7 | 77.78% | 66.67% |
| 4th | 60,1070%, 15%, 15%  1000, 1e-6, 1e-7 | 87.04% | 79.63% | 9th | 65,5  70%, 15%, 15%  1000, 1e-6, 1e-7 | 72.22% | 75.93% |
| 5th | 6070%, 15%, 15%  1000, 1e-6, 1e-7 | 48.15% | 44.44% | 10th | 65  70%, 15%, 15%  1000, 1e-6, 1e-7 | 66.67% | 68.52% |

4th step - optimiza\_loop\_tain\_dataset

* Select Best Training hidden layer size, validation and parameters to do loop training
* Hidden Layer Size - 20,10
* Validation - 70%, 15%, 15%
* Parameters - 1 000, 1e-6, 1e-7
* Loop run 10 times.

Iteration 1 of 10

Iteration 1: Validation Accuracy = 81.48%, Test Accuracy = 79.63%

Iteration 2 of 10

Iteration 2: Validation Accuracy = 85.19%, Test Accuracy = 83.33%

Iteration 3 of 10

Iteration 3: Validation Accuracy = 72.22%, Test Accuracy = 51.85%

Iteration 4 of 10

Iteration 4: Validation Accuracy = 79.63%, Test Accuracy = 87.04%

Iteration 5 of 10

Iteration 5: Validation Accuracy = 83.33%, Test Accuracy = 85.19%

Iteration 6 of 10

Iteration 6: Validation Accuracy = 79.63%, Test Accuracy = 68.52%

Iteration 7 of 10

Iteration 7: Validation Accuracy = 75.93%, Test Accuracy = 74.07%

Iteration 8 of 10

Iteration 8: Validation Accuracy = 83.33%, Test Accuracy = 75.93%

Iteration 9 of 10

Iteration 9: Validation Accuracy = 75.93%, Test Accuracy = 68.52%

Iteration 10 of 10

Iteration 10: Validation Accuracy = 66.67%, Test Accuracy = 79.63%

Average Validation Accuracy: 78.33%

Average Test Accuracy: 75.37%

|  |  |
| --- | --- |
| Hidden layers | 20,10 |
| Validation | 70%, 15%, 15% |
| Parameters | 1000, 1e-6, 1e-7 |
| Training Accuracy | 78.33% |
| Testing Accuracy | 75.37% |

5th step - using\_loop\_training\_dataset

* Select Best Training hidden layer size, validation and parameters to do loop training
* Hidden Layer Size - 20,10
* Validation - 70%, 15%, 15%
* Parameters - 1 000, 1e-6, 1e-7
* Loop run 10 times.

**Results**

Iteration 1 of 10

Iteration 1: Training Accuracy = 98.02%, Test Accuracy = 68.52%

Iteration 2 of 10

Iteration 2: Training Accuracy = 100.00%, Test Accuracy = 88.89%

Iteration 3 of 10

Iteration 3: Training Accuracy = 74.21%, Test Accuracy = 62.96%

Iteration 4 of 10

Iteration 4: Training Accuracy = 85.71%, Test Accuracy = 72.22%

Iteration 5 of 10

Iteration 5: Training Accuracy = 100.00%, Test Accuracy = 81.48%

Iteration 6 of 10

Iteration 6: Training Accuracy = 100.00%, Test Accuracy = 75.93%

Iteration 7 of 10

Iteration 7: Training Accuracy = 98.41%, Test Accuracy = 87.04%

Iteration 8 of 10

Iteration 8: Training Accuracy = 100.00%, Test Accuracy = 68.52%

Iteration 9 of 10

Iteration 9: Training Accuracy = 98.02%, Test Accuracy = 74.07%

Iteration 10 of 10

Iteration 10: Training Accuracy = 77.38%, Test Accuracy = 68.52%

Training and testing completed for 10 iterations. Results saved.

|  |  |
| --- | --- |
| Hidden layers | 20,10 |
| Validation | 70%, 15%, 15% |
| Parameters | 1000, 1e-6, 1e-7 |
| Validation Accuracy | 93.17% |
| Testing Accuracy | 74.26% |