**Generation Algorithm for ResNet model with 3 Channel Feature Image Dataset**

The results are for the best performing generations of each dataset.

POPULATION\_SIZE = 30  
NUM\_GENERATIONS = 20  
NUM\_PARENTS = 5

individual = {  
 'learning\_rate': 10 \*\* np.random.uniform(-10, -1),  
 'batch\_size': np.random.choice([16, 32, 64, 128]),  
 'dense\_neurons': np.random.choice([128, 256, 512, 1024]),  
 'activation': np.random.choice(['relu', 'tanh', 'sigmoid', 'leaky\_relu', 'elu']),  
 'dropout\_rate': np.random.uniform(0.01, 0.5),  
 'n\_clusters': np.random.randint(2, 20)  
}

CH = Chroma

ME = Mel-Spectrogram

MM = MMFC

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| **DATASET: EMODB - CH\_ME\_MM** | |
| **Optimization completed. Best Accuracy: 0.7943925261497498**  **Best Hyperparameters: {'learning\_rate': 0.003539921133896659, 'batch\_size': 128, 'dense\_neurons': 512, 'activation': 'tanh', 'dropout\_rate': 0.3424750389918616, 'n\_clusters': 8}**  **Classification Report for the Best Model:**  **precision recall f1-score support**  **anger 0.86 0.94 0.90 33**  **boredom 0.76 0.87 0.81 15**  **disgust 0.75 0.55 0.63 11**  **fear 0.71 0.71 0.71 7**  **happiness 0.38 0.33 0.35 9**  **neutral 0.73 0.73 0.73 15**  **sadness 1.00 0.94 0.97 17**  **accuracy 0.79 107**  **macro avg 0.74 0.72 0.73 107**  **weighted avg 0.79 0.79 0.79 107** | |
| **Chosen Hyperparameter Values** | |
| **Learning Rate** | **0.003539921133896659** |
| **Batch Size** | **128** |
| **Dense Neurons** | **512** |
| **Activation** | **tanh** |
| **Dropout Rate** | **0.3424750389918616** |
| **Number of Clusters** | **8** |

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| **DATASET: EMODB - CH\_MM\_ME** | |
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| **Chosen Hyperparameter Values** | |
| **Learning Rate** |  |
| **Batch Size** |  |
| **Dense Neurons** |  |
| **Activation** |  |
| **Dropout Rate** |  |
| **Number of Clusters** |  |

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| **DATASET: EMODB - MM\_CH\_ME** | |
|  | |
| **Chosen Hyperparameter Values** | |
| **Learning Rate** |  |
| **Batch Size** |  |
| **Dense Neurons** |  |
| **Activation** |  |
| **Dropout Rate** |  |
| **Number of Clusters** |  |

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| **DATASET: EMODB - MM\_ME\_CH** | |
|  | |
| **Chosen Hyperparameter Values** | |
| **Learning Rate** |  |
| **Batch Size** |  |
| **Dense Neurons** |  |
| **Activation** |  |
| **Dropout Rate** |  |
| **Number of Clusters** |  |