**Tests performed on different classifiers:**

**Log File:**

**Decision Tree:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1 max\_leaf\_nodes** | **Parameter2 max\_depth** | **Parameter3 max\_features** | **Accuracy** | **F-Score** |
| 1 | 10 | 10 | auto | 77.44 | 76.53 |
| 2 | 8 | 10 | None | 88.34 | 88.35 |
| 3 | 10 | 8 | None | 89.33 | 89.33 |
| 4 | 20 | 10 | None | 92.66 | 92.65 |
| 5 | 50 | 10 | None | 96.78 | 96.69 |

**Perceptron:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1**  **n\_iter** | **Parameter2 alpha** | **Accuracy** | **F-Score** |
| 1 | 15 | 0.01 | 78.11 | 78.11 |
| 2 | 3 | 0.1 | 73.83 | 73.83 |
| 3 | 5 | 0.01 | 67.01 | 67.01 |
| 4 | 10 | 0.01 | 75.27 | 75.27 |

**Neural Net:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1 hidden\_layer\_sizes** | **Parameter2 max\_iter** | **Parameter3**  **alpha** | **Parameter4 momentum** | **Accuracy** | **F-Score** |
| 1 | (25,50) | 10 | 0.1 | 0.1 | 71.98 | 72.14 |
| 2 | (50,50) | 10 | 0.1 | 0.3 | 73.88 | 77.35 |
| 3 | (50,50) | 12 | 0.1 | 0.3 | 78.09 | 77.84 |
| 4 | (50,50) | 15 | 0.3 | 0.7 | 79.59 | 80.09 |
| 5 | (100,100) | 100 | 0.3 | 0.7 | 93.55 | 93.22 |

**DeepLearning:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1 hidden\_layer\_sizes** | **Parameter2 max\_iter** | **Parameter3**  **alpha** | **Parameter4 momentum** | **Parameter5 Activation** | **Accuracy** | **F-Score** |
| 1 | (25,25,25,25) | 10 | 0.1 | 0.1 | logistic | 70.08 | 70.087 |
| 2 | (25,25,25,25) | 10 | 0.1 | 0.1 | relu | 71.57 | 70.02 |
| 3 | (50,50,50,50) | 10 | 0.1 | 0.1 | relu | 80.15 | 79.42 |
| 4 | (50,50,50,50) | 100 | 0.3 | 0.7 | relu | 93.1 | 93.7 |
| 5 | (100,100,100,100) | 100 | 0.3 | 0.7 | relu | 93.47 | 94.05 |

**SVM:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1**  **C** | **Parameter2 Kernel** | **Accuracy** | **F-Score** |
| 1 | 1 | linear | 87.77 | 87.77 |
| 2 | 1 | poly | 94.62 | 94.62 |
| 3 | 100 | ploy | 95.12 | 95.12 |
| 4 | 1 | rbf | 95.53 | 95.53 |
| 5 | 100 | rbf | 98.43 | 98.43 |

**Naïve Bayes:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Experiment #** | **Parameter1 alpha** | **Accuracy** | **F-Score** |
| 1 | 0.01 | 71.57 | 71.57 |
| 2 | 0.1 | 71.57 | 71.57 |
| 3 | 1 | 71.57 | 71.50 |

**Logistic Regression:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1**  **C** | **Parameter2 max\_iter** | **Accuracy** | **F-Score** |
| 1 | 1 | 1 | 72.39 | 72.39 |
| 2 | 10 | 2 | 74.95 | 74.95 |
| 3 | 1 | 10 | 80.25 | 80.25 |
| 4 | 10 | 10 | 82.19 | 82.19 |

**KNeighbors:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1**  **n\_neighbors** | **Parameter2 leaf\_size** | **Accuracy** | **F-Score** |
| 1 | 1 | 1 | 85.05 | 85.05 |
| 2 | 1 | 100 | 87.85 | 87.85 |
| 3 | 3 | 30 | 92.56 | 92.56 |
| 4 | 5 | 30 | 95.28 | 95.28 |
| 5 | 7 | 30 | 94.54 | 94.54 |

**Bagging:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1**  **n\_estimators** | **Parameter2 max\_samples** | **Accuracy** | **F-Score** |
| 1 | 1 | 1 | 66.32 | 51.52 |
| 2 | 1 | 100 | 84.95 | 85.62 |
| 3 | 10 | 100 | 92.56 | 90.82 |
| 4 | 30 | 100 | 93.88 | 92.40 |
| 5 | 30 | 1000 | 97.36 | 97.44 |

**Random Forest:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1**  **n\_estimators** | **Parameter2 max\_depth** | **Accuracy** | **F-Score** |
| 1 | 1 | 1 | 71.32 | 71.32 |
| 2 | 1 | 10 | 90.75 | 90.58 |
| 3 | 10 | 10 | 96..52 | 96.03 |
| 4 | 100 | 10 | 97.60 | 97.52 |

**AdaBoosting :**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1**  **n\_estimators** | **Parameter2 learning\_rate** | **Accuracy** | **F-Score** |
| 1 | 1 | 1 | 71.32 | 71.32 |
| 2 | 10 | 1n | 86.78 | 86.78 |
| 3 | 20 | 0.9 | 86.61 | 86.61 |
| 4 | 30 | 1 | 86.44 | 86.44 |

**GradientBoosting:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Experiment #** | **Paramete1**  **n\_estimators** | **Parameter2 learning\_rate** | **Accuracy** | **F-Score** |
| 1 | 1 | 1 | 82.48 | 82.48 |
| 2 | 3 | 0.9 | 91.57 | 91.57 |
| 3 | 5 | 0.9 | 95.87 | 95.87 |
| 4 | 10 | 0.5 | 96.20 | 96.03 |
| 5 | 30 | 1 | 99.17 | 99.17 |