**PRACTICAL 5**

**Aim:** Perform, evaluate, and compare classification algorithms using open-source tools like WEKA.

**Output:**

Dataset 1: breast-cancer

Dataset 2: segment- challenge

Dataset 3: contact - lenses

Dataset 4: diabetes

Accuracy:

|  |  |  |  |
| --- | --- | --- | --- |
| Dataset / Algorithm | DT | NB | KNN |
| Dataset 1 | 70.6294 % | 71.6783 % | 72.3776 % |
| Dataset 2 | 94.2667 % | 81.0667% | 96.2 % |
| Dataset 3 | 83.3333 % | 70.8333 % | 79.1667 % |
| Dataset 4 | 75.2604 % | 76.3021 % | 70.1823 % |

Precision:

|  |  |  |  |
| --- | --- | --- | --- |
| Dataset / Algorithm | DT | NB | KNN |
| Dataset 1 | 0.669 | 0.704 | 0.699 |
| Dataset 2 | 0.944 | 0.832 | 0.962 |
| Dataset 3 | 0.833 | 0.691 | 0.802 |
| Dataset 4 | 0.747 | 0.759 | 0.696 |

Recall:

|  |  |  |  |
| --- | --- | --- | --- |
| Dataset / Algorithm | DT | NB | KNN |
| Dataset 1 | 0.706 | 0.717 | 0.724 |
| Dataset 2 | 0.943 | 0.811 | 0.962 |
| Dataset 3 | 0.833 | 0.708 | 0.792 |
| Dataset 4 | 0.753 | 0.763 | 0.702 |

F-Measure:

|  |  |  |  |
| --- | --- | --- | --- |
| Dataset / Algorithm | DT | NB | KNN |
| Dataset 1 | 0.664 | 0.708 | 0.697 |
| Dataset 2 | 0.943 | 0.793 | 0.962 |
| Dataset 3 | 0.833 | 0.698 | 0.795 |
| Dataset 4 | 0.748 | 0.760 | 0.698 |

Sensitivity:

|  |  |  |  |
| --- | --- | --- | --- |
| Dataset / Algorithm | DT | NB | KNN |
| Dataset 1 | 0.706 | 0.717 | 0.724 |
| Dataset 2 | 0.943 | 0.811 | 0.962 |
| Dataset 3 | 0.833 | 0.708 | 0.792 |
| Dataset 4 | 0.753 | 0.763 | 0.702 |

Specificity:

|  |  |  |  |
| --- | --- | --- | --- |
| Dataset / Algorithm | DT | NB | KNN |
| Dataset 1 | 0.572 | 0.446 | 0.511 |
| Dataset 2 | 0.009 | 0.030 | 0.006 |
| Dataset 3 | 0.158 | 0.305 | 0.167 |
| Dataset 4 | 0.328 | 0.307 | 0.378 |