## Class-wise Metrics for Random Forest

|  |  |  |  |
| --- | --- | --- | --- |
| Class Label | Recall | Precision | F1-Score |
| Class 0 | 100.000000 | 50.798991 | 67.373118 |
| Class 1 | 95.172414 | 91.390728 | 93.243243 |
| Class 2 | 48.648649 | 91.139241 | 63.436123 |
| Class 3 | 98.850575 | 93.989071 | 96.358543 |
| Class 4 | 1.923077 | 60.000000 | 3.726708 |
| Class 5 | 37.931034 | 87.301587 | 52.884615 |
| Class 6 | 0.000000 | 0.000000 | 0.000000 |
| Class 7 | 96.688742 | 96.688742 | 96.688742 |
| Class 8 | 2.158273 | 37.500000 | 4.081633 |
| Class 9 | 81.884058 | 94.166667 | 87.596899 |
| Average | 56.325682 | 70.297503 | 56.538962 |

## Overall Metrics for Random Forest

|  |  |
| --- | --- |
| Metric | Value |
| Train Accuracy | 84.812724 |
| Test Accuracy | 66.974359 |
| Average Recall | 56.325682 |
| Average Precision | 70.297503 |
| Average F1-Score | 56.538962 |
| ROC AUC | 0.964721 |

## Class-wise Metrics for Gradient Boosting

|  |  |  |  |
| --- | --- | --- | --- |
| Class Label | Recall | Precision | F1-Score |
| Class 0 | 100.000000 | 100.000000 | 100.000000 |
| Class 1 | 97.241379 | 95.918367 | 96.575342 |
| Class 2 | 83.783784 | 77.987421 | 80.781759 |
| Class 3 | 81.609195 | 95.945946 | 88.198758 |
| Class 4 | 90.384615 | 88.125000 | 89.240506 |
| Class 5 | 92.413793 | 95.035461 | 93.706294 |
| Class 6 | 94.000000 | 89.808917 | 91.856678 |
| Class 7 | 96.688742 | 98.648649 | 97.658863 |
| Class 8 | 79.136691 | 76.923077 | 78.014184 |
| Class 9 | 80.434783 | 77.622378 | 79.003559 |
| Average | 89.569298 | 89.601522 | 89.503594 |

## Overall Metrics for Gradient Boosting

|  |  |
| --- | --- |
| Metric | Value |
| Train Accuracy | 100.000000 |
| Test Accuracy | 92.000000 |
| Average Recall | 89.569298 |
| Average Precision | 89.601522 |
| Average F1-Score | 89.503594 |
| ROC AUC | 0.996150 |

## Class-wise Metrics for RNN

|  |  |  |  |
| --- | --- | --- | --- |
| Class Label | Recall | Precision | F1-Score |
| Class 0 | 99.668874 | 99.834163 | 99.751450 |
| Class 1 | 53.793103 | 52.348993 | 53.061224 |
| Class 2 | 75.675676 | 77.777778 | 76.712329 |
| Class 3 | 34.482759 | 45.112782 | 39.087948 |
| Class 4 | 98.076923 | 77.272727 | 86.440678 |
| Class 5 | 100.000000 | 96.666667 | 98.305085 |
| Class 6 | 97.333333 | 78.074866 | 86.646884 |
| Class 7 | 58.278146 | 54.320988 | 56.230032 |
| Class 8 | 64.028777 | 69.531250 | 66.666667 |
| Class 9 | 50.000000 | 71.875000 | 58.974359 |
| Average | 73.133759 | 72.281521 | 72.187666 |

## Overall Metrics for RNN

|  |  |
| --- | --- |
| Metric | Value |
| Train Accuracy | 78.194484 |
| Test Accuracy | 79.076922 |
| Average Recall | 73.133759 |
| Average Precision | 72.281521 |
| Average F1-Score | 72.187666 |
| ROC AUC | 0.975035 |

## Class-wise Metrics for CNN 1D

|  |  |  |  |
| --- | --- | --- | --- |
| Class Label | Recall | Precision | F1-Score |
| Class 0 | 100.000000 | 100.000000 | 100.000000 |
| Class 1 | 100.000000 | 98.639456 | 99.315068 |
| Class 2 | 100.000000 | 100.000000 | 100.000000 |
| Class 3 | 100.000000 | 100.000000 | 100.000000 |
| Class 4 | 100.000000 | 98.113208 | 99.047619 |
| Class 5 | 97.241379 | 100.000000 | 98.601399 |
| Class 6 | 100.000000 | 99.337748 | 99.667774 |
| Class 7 | 100.000000 | 100.000000 | 100.000000 |
| Class 8 | 97.122302 | 98.540146 | 97.826087 |
| Class 9 | 100.000000 | 100.000000 | 100.000000 |
| Average | 99.436368 | 99.463056 | 99.445795 |

## Overall Metrics for CNN 1D

|  |  |
| --- | --- |
| Metric | Value |
| Train Accuracy | 99.264548 |
| Test Accuracy | 99.589741 |
| Average Recall | 99.436368 |
| Average Precision | 99.463056 |
| Average F1-Score | 99.445795 |
| ROC AUC | 0.999989 |

## Class-wise Metrics for CNN 2D

|  |  |  |  |
| --- | --- | --- | --- |
| Class Label | Recall | Precision | F1-Score |
| Class 0 | 100.000000 | 99.594046 | 99.796610 |
| Class 1 | 87.894737 | 95.428571 | 91.506849 |
| Class 2 | 95.505618 | 98.265896 | 96.866097 |
| Class 3 | 79.166667 | 77.551020 | 78.350515 |
| Class 4 | 95.348837 | 87.700535 | 91.364903 |
| Class 5 | 83.240223 | 84.180791 | 83.707865 |
| Class 6 | 83.333333 | 83.333333 | 83.333333 |
| Class 7 | 100.000000 | 100.000000 | 100.000000 |
| Class 8 | 100.000000 | 100.000000 | 100.000000 |
| Class 9 | 100.000000 | 100.000000 | 100.000000 |
| Average | 92.448942 | 92.605419 | 92.492617 |

## Overall Metrics for CNN 2D

|  |  |
| --- | --- |
| Metric | Value |
| Train Accuracy | 96.184694 |
| Test Accuracy | 95.914692 |
| Average Recall | 92.448942 |
| Average Precision | 92.605419 |
| Average F1-Score | 92.492617 |
| ROC AUC | 0.999397 |

## Class-wise Metrics for LSTM

|  |  |  |  |
| --- | --- | --- | --- |
| Class Label | Recall | Precision | F1-Score |
| Class 0 | 100.000000 | 100.000000 | 100.000000 |
| Class 1 | 100.000000 | 100.000000 | 100.000000 |
| Class 2 | 80.405405 | 79.865772 | 80.134680 |
| Class 3 | 100.000000 | 99.428571 | 99.713467 |
| Class 4 | 100.000000 | 99.363057 | 99.680511 |
| Class 5 | 100.000000 | 100.000000 | 100.000000 |
| Class 6 | 100.000000 | 97.402597 | 98.684211 |
| Class 7 | 100.000000 | 98.692810 | 99.342105 |
| Class 8 | 74.820144 | 78.195489 | 76.470588 |
| Class 9 | 97.826087 | 100.000000 | 98.901099 |
| Average | 95.305164 | 95.294830 | 95.292666 |

## Overall Metrics for LSTM

|  |  |
| --- | --- |
| Metric | Value |
| Train Accuracy | 94.989142 |
| Test Accuracy | 96.564102 |
| Average Recall | 95.305164 |
| Average Precision | 95.294830 |
| Average F1-Score | 95.292666 |
| ROC AUC | 0.999290 |

## Class-wise Metrics for SVM

|  |  |  |  |
| --- | --- | --- | --- |
| Class Label | Recall | Precision | F1-Score |
| Class 0 | 99.172185 | 97.557003 | 98.357964 |
| Class 1 | 21.379310 | 23.134328 | 22.222222 |
| Class 2 | 81.081081 | 59.701493 | 68.767908 |
| Class 3 | 3.448276 | 37.500000 | 6.315789 |
| Class 4 | 95.512821 | 66.816143 | 78.627968 |
| Class 5 | 98.620690 | 100.000000 | 99.305556 |
| Class 6 | 95.333333 | 79.005525 | 86.404834 |
| Class 7 | 28.476821 | 24.855491 | 26.543210 |
| Class 8 | 41.726619 | 39.189189 | 40.418118 |
| Class 9 | 26.086957 | 30.769231 | 28.235294 |
| Average | 59.083809 | 55.852840 | 55.519886 |

## Overall Metrics for SVM

|  |  |
| --- | --- |
| Metric | Value |
| Train Accuracy | 97.331965 |
| Test Accuracy | 69.692308 |
| Average Recall | 59.083809 |
| Average Precision | 55.852840 |
| Average F1-Score | 55.519886 |
| ROC AUC | 0.945204 |

## Class-wise Metrics for Voting Classifier

|  |  |  |  |
| --- | --- | --- | --- |
| Class Label | Recall | Precision | F1-Score |
| Class 0 | 100.000000 | 100.000000 | 100.000000 |
| Class 1 | 100.000000 | 97.972973 | 98.976109 |
| Class 2 | 81.756757 | 90.298507 | 85.815603 |
| Class 3 | 98.275862 | 99.418605 | 98.843931 |
| Class 4 | 99.358974 | 100.000000 | 99.678457 |
| Class 5 | 100.000000 | 100.000000 | 100.000000 |
| Class 6 | 100.000000 | 94.936709 | 97.402597 |
| Class 7 | 99.337748 | 100.000000 | 99.667774 |
| Class 8 | 85.611511 | 82.068966 | 83.802817 |
| Class 9 | 99.275362 | 98.561151 | 98.916968 |
| Average | 96.361621 | 96.325691 | 96.310426 |

## Overall Metrics for Voting Classifier

|  |  |
| --- | --- |
| Metric | Value |
| Train Accuracy | 100.000000 |
| Test Accuracy | 97.282051 |
| Average Recall | 96.361621 |
| Average Precision | 96.325691 |
| Average F1-Score | 96.310426 |
| ROC AUC | 0.999072 |