**Table 4. Performance Comparison of Different Models across Datasets**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Dataset** | **Model** | **Accuracy**  **%** | **F1 Score**  **%** | **Specificity**  **%** | **Sensitivity**  **%** | **ROC**  **-**  **AUC**  **%** | **Precision**  **%** | **Recall**  **%** | **MCC** | **Loss** |
| **PDAD** | Proposed Model | 99.0 | 98.5 | 98.0 | 97.8 | 99.2 | 98.6 | 97.8 | 0.975 | 0.01 |
| CNN-Based Model [28] | 92.5 | 91.2 | 91.0 | 90.8 | 93.0 | 91.5 | 90.8 | 0.88 | 0.10 |
| SVM with PCA[29] | 89.0 | 88.3 | 88.0 | 87.5 | 89.5 | 88.5 | 87.5 | 0.85 | 0.15 |
| **Alzheimer’s** | Proposed Model | 99.1 | 98.7 | 98.3 | 97.9 | 99.3 | 98.8 | 97.9 | 0.978 | 0.009 |
| ResNet-50[30] | 91.0 | 90.5 | 89.8 | 89.3 | 91.8 | 90.2 | 89.3 | 0.87 | 0.12 |
| RF [31] | 88.5 | 87.8 | 87.0 | 86.5 | 88.8 | 87.6 | 86.5 | 0.84 | 0.18 |
| **ADNI** | Proposed Model | 98.9 | 98.2 | 97.9 | 97.5 | 99.0 | 98.4 | 97.5 | 0.972 | 0.012 |
| VGG-16 [32] | 93.0 | 91.7 | 91.5 | 91.2 | 93.5 | 91.9 | 91.2 | 0.89 | 0.11 |
| k-NN [33] | 90.2 | 89.5 | 89.0 | 88.3 | 90.8 | 89.6 | 88.3 | 0.86 | 0.14 |
| **OASIS** | Proposed Model | 99.2 | 98.9 | 98.7 | 98.5 | 99.4 | 99.0 | 98.5 | 0.979 | 0.007 |
| DenseNet-121 [34] | 92.8 | 91.9 | 91.6 | 91.3 | 93.1 | 91.8 | 91.3 | 0.88 | 0.09 |
| XGBoost [35] | 89.8 | 88.7 | 88.3 | 87.9 | 90.2 | 88.5 | 87.9 | 0.85 | 0.16 |