# MODEL PERFORMANCE TESTING

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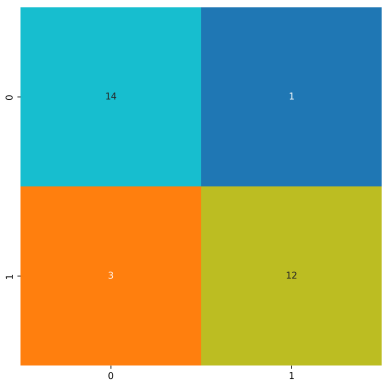
| Date | 10 November 2022 |
| Team ID | PNT2022TMID35637 |
| Project Name | Detecting Parkinson's Disease Using Machine Learning |
| Maximum Marks | 10 Marks |

## SPIRAL MODEL → RANDOM FOREST CLASSIFIER

| S.No. | Parameter | Value | Screenshot |
|---|---|---|---|
| 1 | Accuracy | 86.667% | Accuracy: 0.8666666666666667 |
| 2 | Recall | 80% | Recall: 0.8 |
| 3 | Precision | 92.308% | Precision: 0.9230769230769231 |
| 4 | Specificity | 93.333% | Specificity: 0.9333333333333333 |
| 5 | F1 Score | 85.714% | F1 score: 0.8571428571428571 |
| 6 | ROC AUC Score | 86.667% | ROC AUC Score: 0.8666666666666667 |
| 7 | Confusion Matrix | [[14 1]<br>[3 12]] | Confusion Matrix:<br>[[14 1]<br>[ 3 12]]<br>  |

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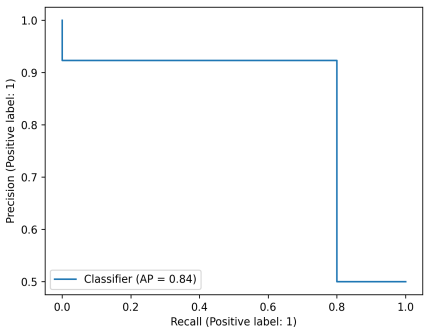
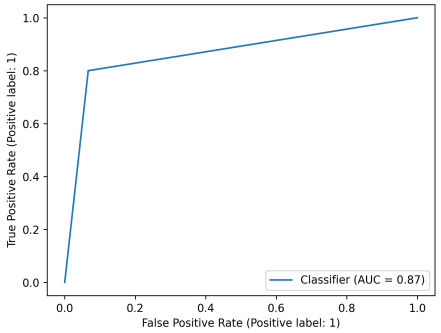
|---|---|---|---|
| 8 | Precision-Recall Curve | Precision: [0.5 0.923 1]<br>Recall: [1 0.8 0]<br>Threshold: [0 1] | PR CURVE:-<br>Precision: [0.5 0.92307692 1. ]<br>Recall: [1. 0.8 0. ]<br>Threshold: [0 1]<br>  |
| 9 | ROC Curve | FPR: [0 0.067 1]<br>TPR: [0 0.8 1]<br>Threshold: [2 1 0] | ROC CURVE:-<br>Fpr: [0. 0.06666667 1. ]<br>Tpr: [0. 0.8 1. ]<br>Threshold: [2 1 0]<br>  |

**Hyperparameter** → n_estimators = 1000

**<u>WAVE MODEL</u>** → **K-NEIGHBOR CLASSIFIER**

| S.No. | Parameter | Value | Screenshot |
|---|---|---|---|
| 1 | Accuracy | 76.667% | Accuracy: 0.7666666666666667 |
| 2 | Recall | 86.667% | Recall: 0.8666666666666667 |
| 3 | Precision | 72.222% | Precision: 0.7222222222222222 |
| 4 | Specificity | 66.667% | Specificity: 0.6666666666666666 |
| 5 | F1 Score | 78.788% | F1 score: 0.7878787878787877 |

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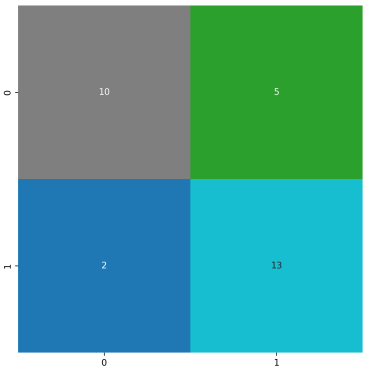
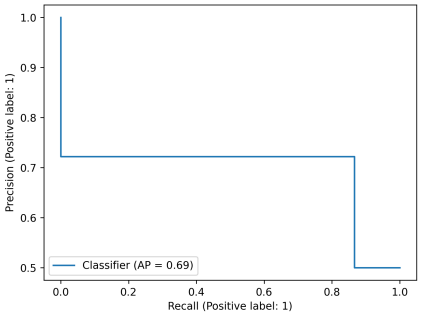
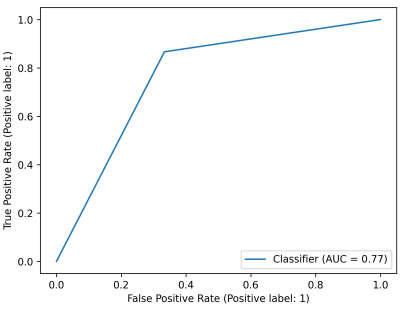
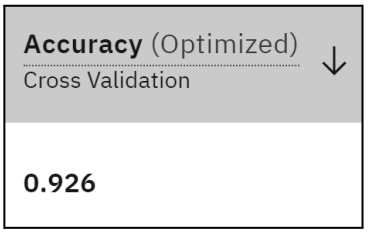
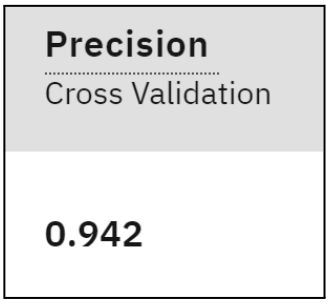
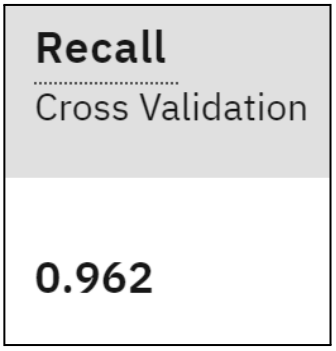
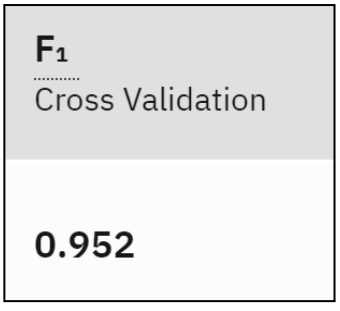
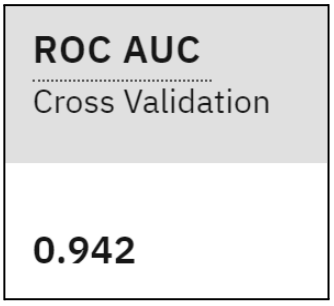
|---|---|---|---|
| 6 | ROC AUC Score | 76.667% | ROC AUC Score: 0.7666666666666668 |
| 7 | Confusion Matrix | [[10 5]<br>[2 13]] | Confusion Matrix:<br>[[10 5]<br>[ 2 13]]<br>  |
| 8 | Precision Recall Curve | Precision: [0.5 0.722 1 ]<br>Recall: [1 0.867 0]<br>Threshold: [0 1] | PR CURVE:-<br>Precision: [0.5 0.72222222 1. ]<br>Recall: [1. 0.86666667 0. ]<br>Threshold: [0 1]<br>  |
| 9 | ROC Curve | FPR: [0 0.333 1]<br>TPR: [0 0.867 1]<br>Threshold: [2 1 0] | ROC CURVE:-<br>Fpr: [0. 0.33333333 1. ]<br>Tpr: [0. 0.86666667 1. ]<br>Threshold: [2 1 0]<br>  |

**VOICE MODEL → SNAP BOOSTING MACHINE CLASSIFIER (AUTO AI)**

| S. No | Parameter | Value | Screenshot |
|---|---|---|---|
| 1 | Accuracy | 92.6% |  |
| 2 | Precision | 94.2% |  |
| 3 | Recall | 96.2% |  |
| 4 | F1 Score | 95.2% |  |
| 5 | ROC AUC Score | 94.2% |  |

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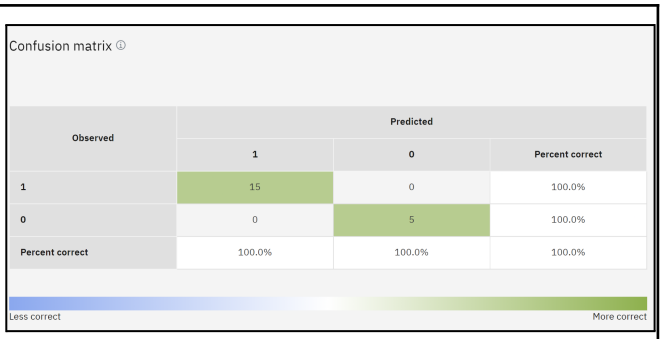
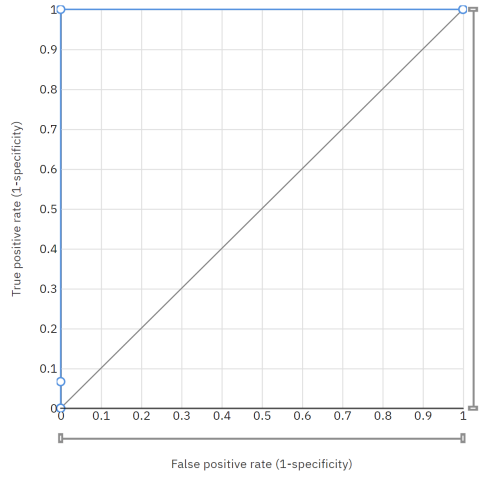
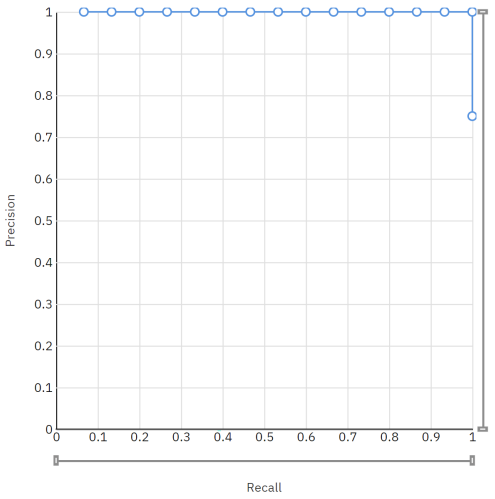
|---|---|---|---|
| 6 | Confusion Matrix | [[15 0] [0 5]] |  |
| 7 | ROC Curve | |  |
| 8 | Precision Recall Curve | |  |







**Hyperparameter** → HPO - 1, FE, HPO - 2