

Supplementary Material

Table S1: Performance Metrics of Various Algorithms on Different Brain Regions in Male Brain Scans (%)

Source: Authors' own work.

Model / Region	Accuracy	Specificity	Sensitivity
Putamen			
Random Forest	84.09	86.36	81.82
Decision Tree	59.09	59.09	59.09
Extra Trees	86.36	90.91	81.82
AdaBoost	68.18	68.18	68.18
Gradient Boosting	54.55	50.00	59.09
XGBoost	70.45	72.73	68.18
Logistic Regression	52.27	54.55	50.00
Linear SVM	52.27	54.55	50.00
Polynomial SVM	56.82	95.45	18.18
NB	52.27	45.45	59.09
KNN	59.09	68.18	50.00
Thalamus			
Random Forest	70.45	68.18	72.73
Decision Tree	59.09	54.55	63.64
Extra Trees	77.27	81.82	72.73
AdaBoost	65.91	50.00	81.82
Gradient Boosting	68.18	68.18	68.18
Logistic Regression	68.18	68.18	68.18
Linear SVM	65.91	63.64	68.18

Continued on next page

Table S1 – *Continued from previous page*

Model / Region	Accuracy	Specificity	Sensitivity
Polynomial SVM	56.82	95.45	18.18
XGBoost	65.91	72.73	59.09
NB	61.36	68.18	54.54
KNN	63.63	72.72	54.54
Brainstem			
Random Forest	68.18	68.18	68.18
Decision Tree	52.27	63.64	40.91
Extra Trees	84.09	90.91	77.27
AdaBoost	52.27	63.64	40.91
Gradient Boosting	63.64	63.64	63.64
XGBoost	52.27	45.45	59.09
Logistic Regression	43.18	40.91	45.45
Linear SVM	45.45	40.91	50.00
Polynomial SVM	52.27	100.00	4.55
NB	54.45	72.72	36.36
KNN	70.45	86.36	54.54
Accumen			
Random Forest	61.36	63.64	59.09
Decision Tree	61.36	54.55	68.18
Extra Trees	65.91	77.27	54.55
AdaBoost	36.36	36.36	36.36
Gradient Boosting	52.27	50.00	54.55
XGBoost	61.36	54.55	68.18
Logistic Regression	52.27	68.18	36.36
Linear SVM	45.45	59.09	31.82
Polynomial SVM	54.55	95.45	13.64
NB	54.54	54.54	54.54
KNN	59.09	59.09	59.09
Amyddalla			
Random Forest	63.64	59.09	68.18
Decision Tree	59.09	59.09	59.09
Extra Trees	72.73	77.27	68.18
AdaBoost	54.55	59.09	50.00
Gradient Boosting	56.82	59.09	54.55
XGBoost	54.55	59.09	50.00
Logistic Regression	45.45	45.45	45.45
Linear SVM	47.73	45.45	50.00
Polynomial SVM	54.55	95.45	13.64
NB	50.0	64.64	36.36
KNN	56.82	59.09	54.55
Caudate			
Random Forest	54.55	54.55	54.55
Decision Tree	47.73	36.36	59.09

Continued on next page

Table S1 – *Continued from previous page*

Model / Region	Accuracy	Specificity	Sensitivity
Extra Trees	70.45	86.36	54.55
AdaBoost	56.82	54.55	59.09
Gradient Boosting	50.00	45.45	54.55
XGBoost	54.55	54.55	54.55
Logistic Regression	47.73	54.55	40.91
Linear SVM	45.45	54.55	36.36
Polynomial SVM	54.55	95.45	13.64
NB	40.91	45.55	36.36
KNN	54.55	63.64	45.45
Hippocampus			
Random Forest	70.45	77.27	63.64
Decision Tree	43.18	50.00	36.36
Extra Trees	70.45	81.82	59.09
AdaBoost	45.45	45.45	45.45
Gradient Boosting	50.00	63.64	36.36
XGBoost	52.27	54.55	50.00
Logistic Regression	54.55	72.73	36.36
Linear SVM	56.82	68.18	45.45
Polynomial SVM	54.55	95.45	13.64
NB	47.73	31.82	63.64
KNN	54.55	59.09	50.00
Palladium			
Random Forest	63.64	68.18	59.09
Decision Tree	63.64	63.64	63.64
Extra Trees	75.00	81.82	68.18
AdaBoost	61.36	54.55	68.18
Gradient Boosting	59.09	68.18	50.00
XGBoost	56.82	59.09	54.55
Logistic Regression	70.45	72.73	68.18
Linear SVM	70.45	72.73	68.18
Polynomial SVM	56.82	95.45	18.18
NB	65.91	81.82	50.00
KNN	61.36	72.73	50.00

Table S2: Performance Metrics of Various Algorithms on Different Brain Regions in Male Brain Scans (%)

Source: Authors' own work.

Model / Region	Accuracy	Specificity	Sensitivity
Putamen			
Random Forest	46.15	53.85	38.46
Decision Tree	57.69	61.54	53.85
Extra Trees	46.15	38.46	53.85

Continued on next page

Table S2 – Continued from previous page

Model / Region	Accuracy	Specificity	Sensitivity
AdaBoost	61.54	69.23	53.85
Gradient Boosting	57.69	61.54	53.85
Logistic Regression	50.00	53.85	46.15
Linear SVM	50.00	53.85	46.15
KNN	42.31	30.77	53.85
NB	46.15	69.23	23.08
Polynomial SVM	50.00	92.31	7.69
XGBoost	57.69	46.15	69.23
Thalamus			
Random Forest	38.46	23.08	53.85
Decision Tree	46.15	38.46	53.85
Extra Trees	46.15	23.08	69.23
AdaBoost	50.00	30.77	69.23
Gradient Boosting	38.46	30.77	46.15
Logistic Regression	46.15	15.38	76.92
Linear SVM	46.15	15.38	76.92
KNN	38.46	15.38	61.54
NB	46.15	38.46	53.85
Polynomial SVM	50.00	84.62	15.38
XGBoost	38.46	53.85	23.08
Brainstem			
Random Forest	42.31	38.46	46.15
Decision Tree	57.69	38.46	76.92
Extra Trees	46.15	30.77	61.54
AdaBoost	57.69	53.85	61.54
Gradient Boosting	57.69	38.46	76.92
XGBoost	53.85	53.85	53.85
Logistic Regression	34.62	30.77	38.46
Linear SVM	34.62	23.08	46.15
KNN	46.15	38.46	53.85
NB	38.46	61.54	15.38
Polynomial SVM	50.00	92.31	7.69
Accumen			
Random Forest	42.31	15.38	69.23
Decision Tree	42.31	30.77	53.85
Extra Trees	42.31	23.08	61.54
AdaBoost	46.15	38.46	53.85
Gradient Boosting	38.46	38.46	38.46
XGBoost	38.46	61.54	15.38
Logistic Regression	46.15	30.77	61.54
Linear SVM	50.00	30.77	69.23
KNN	34.62	30.77	38.45
NB	53.85	61.54	46.15

Continued on next page

Table S2 – *Continued from previous page*

Model / Region	Accuracy	Specificity	Sensitivity
Polynomial SVM	46.15	84.62	7.69
Amygdalla			
Random Forest	53.85	46.15	61.54
Decision Tree	57.69	53.85	61.54
Extra Trees	42.31	23.08	61.54
AdaBoost	57.69	53.85	61.54
Gradient Boosting	53.85	53.85	53.85
XGBoost	50.00	53.85	46.15
Logistic Regression	42.31	30.77	53.85
Linear SVM	38.46	30.77	46.15
KNN	46.15	38.46	53.85
NB	69.23	69.23	69.23
Polynomial SVM	42.31	76.92	7.69
Caudate			
Random Forest	50.00	46.15	53.85
Decision Tree	42.31	53.85	30.77
Extra Trees	38.46	38.46	38.46
AdaBoost	53.85	53.85	53.85
Gradient Boosting	50.00	53.85	46.15
XGBoost	46.15	30.77	61.54
Logistic Regression	34.62	23.08	46.15
Linear SVM	34.62	23.08	46.15
KNN	46.15	38.46	53.85
NB	46.15	61.54	30.77
Polynomial SVM	46.15	84.62	7.69
Hippocampus			
Random Forest	38.46	38.46	38.46
Decision Tree	53.85	53.85	53.85
Extra Trees	42.31	30.77	53.85
AdaBoost	53.85	38.46	69.23
Gradient Boosting	50.00	53.85	46.15
XGBoost	53.85	53.85	53.85
Logistic Regression	50.00	30.77	69.23
Linear SVM	42.31	38.46	46.15
KNN	38.45	38.45	38.45
NB	42.31	30.77	53.85
Polynomial SVM	46.15	76.92	15.38
Palladium			
Random Forest	34.62	30.77	38.46
Decision Tree	65.38	69.23	61.54
Extra Trees	38.46	23.08	53.85
AdaBoost	53.85	53.85	53.85
Gradient Boosting	61.54	69.23	53.85

Continued on next page

Table S2 – *Continued from previous page*

Model / Region	Accuracy	Specificity	Sensitivity
XGBoost	38.46	30.77	46.15
Logistic Regression	57.69	53.85	61.54
Linear SVM	53.85	46.15	61.54
KNN	50.00	38.46	64.54
NB	42.31	30.77	53.85
Polynomial SVM	53.85	92.31	15.38