Appendix A Hyperparameter Selection

Table A1 Hyperparameter Tuning Results.

Classifier	Tested Hyperparameters	Selected Hyperparameters
KNN	Neighbors: 3, 5, 7, 9, Distance Metric: Euclidean, Manhattan, and Chebyshev	Neighbors: 9, Distance Metric: Manhattan
SVM	C: 0.1, 1, 10, 100, Kernel: rbf, linear, poly, Gamma: scale, auto, 0.1, 1	C: 10, Kernel: rbf, Gamma: scale
RF	Estimators: 100, 200, 300, Max. depth: 10, 15, 20, 30, None, Min. samples split: 2, 5, 10, Bootstrap: False, True	Estimators: 200, Max. depth: 30, Min. samples split: 10, Bootstrap: False

Appendix B Radiomic Features Selection

Table B2 Selected Radiomic Features after LASSO by Brain Structure.

Structure	Feature Names
L Caudate	Flatness, Robust Mean Absolute Deviation, GLDM Dependence Non Uniformity, GLRLM Run Entropy, GLSZM Gray Level (GL) Non Uniformity, Low GL Zone Emphasis, Size Zone (SZ) Non Uniformity, Small Area High GL Emphasis, Zone Variance
R Caudate	Maximum 2D Diameter Column, Minor Axis Length, GLCM Cluster Prominence, Cluster Shade, Difference Variance, GLRLM GL Variance, GLSZM SZ Non Uniformity Normalized, Small Area Emphasis, Zone Variance, NGTDM Contrast
L Pallidum	Flatness, Maximum 2D Diameter Row, 90 Percentile, GLCM Cluster Shade, NGTDM Strength
R Pallidum	Maximum 2D Diameter Row, Maximum 3D Diameter, Sphericity, 90 Percentile, Kurtosis, GLCM Imc1, GLSZM GL Non Uniformity, Zone Entropy
L Putamen	Maximum 2D Diameter Slice, Interquartile Range, Minimum, Robust Mean Absolute Deviation, GLCM ClusterShade, Imc1, MCC, GLRLM Long Run High GL Emphasis, Run Length (RL) Non Uniformity, GLSZM Small Area Low GL Emphasis, Zone Entropy, NGTDM Complexity
R Putamen	Elongation, Maximum 2D Diameter Row, GLCM Imc1, GLDM Non Uniformity Normalized, GLSZM GL Non Uniformity Normalized, Low GL Zone Emphasis, Small Area Emphasis, Small Area Low GL Emphasis
L Thalamus	Sphericity, Mean, GLDM Non Uniformity Normalized, GLRLM RL Non Uniformity Normalized, Run Variance, GLSZM Large Area High GL Emphasis, Low GL Zone Emphasis, Size Zone Non Uniformity Normalized
R Thalamus	Elongation, Flatness, Maximum 2D Diameter Row, Kurtosis, Skewness, GLDM Small Emphasis, GLSZM Small Area Low GL Emphasis, NGTDM Coarseness
Whitte Matter	Maximum 2D Diameter Column, Maximum 2D Diameter Slice, Maximum 3D Diameter, Sphericity, Surface Volume, Kurtosis, Skewness, GLCM MCC, GLDM Large High GL Emphasis, Large Low GL Emphasis, GLSZM SZ Non Uniformity, Small Area Emphasis
Gray Matter	Elongation, Flatness, Maximum 2D Diameter Column, Mesh Volume, Surface Volume, 90 Percentile, Interquartile Range, Kurtosis, Minimum, Robust Mean Absolute Deviation, GLCM Idmn, MCC, GLRLM Long Run Low GL Emphasis, GLSZM GL Non Uniformity