

Supplemental Table S1. Libraries used for each step of machine learning operations.

Steps	Function	Parent Library	Version	Library	Note
Step 1 Feature Extraction	LBP	skimage	0.17.2	skimage.feature.local_binary_pattern	To get the LBP image
	Haralick	mahotas	1.4.11	mahotas.features.haralick	To calculate 13 Haralick features
	Hu Moments	opencv 4.5.2	cv2.HuMoments	cv2.HuMoments	To get 7 Hu moments
	HSV & LAB Histograms			cv2.cvtColor	To convert RGB into respective color-space
				cv2.calcHist	To calculate histograms
	Concatenate Features	numpy	1.19.1	numpy.concatenate	To concatenate all features
Step 2 Feature Selection	Feature Normalization	sklearn	0.23.2	sklearn.preprocessing.MinMaxScaler	To normalize all extracted features
	Gain Ratio	-	-	-	Custom code was written for this function
	ReliefF	-	-	-	Custom code was written for this function
	Random Forest	sklearn	0.23.2	sklearn.ensemble.RandomForestClassifier	Feature ranking using Random Forest method
Step 3 Model Evaluation	RFE-SVM	sklearn	0.23.2	sklearn.feature_selection.RFE	Feature ranking using RFE-SVM method
	SVM Classifier	sklearn	0.23.2	sklearn.svm.SVC	For SVM classifier model evaluation
	RF Classifier	sklearn	0.23.2	sklearn.ensemble.RandomForestClassifier	For RF classifier model evaluation
Step 4 Model Testing	10-Fold Cross Validation	sklearn	0.23.2	sklearn.model_selection.KFold	To find the optimized features set and classifier
	SVM Classifier	sklearn	0.23.2	sklearn.svm.SVC	For SVM classifier model training and testing
Supporting Libraries	Data Analysis	pandas	1.1.3	-	To create dataframe and to analyze data
	Data Analysis	matplotlib	3.4.3	-	To create plot and visualize.