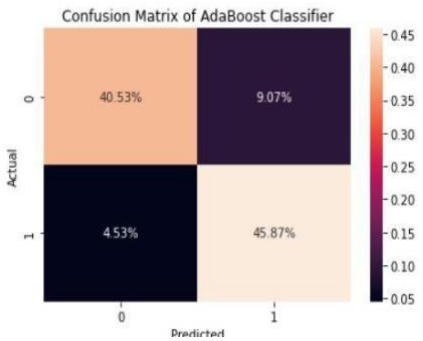
Project Development Phase
Model Performance Test

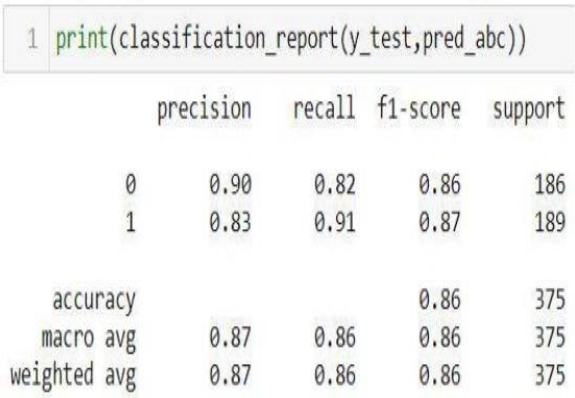
Date	8 November 2022
Team ID	592795
Project Name	Project - Predicting Mental Health Illness of Working Professionals Using Machine Learning
Maximum Marks	10 Marks

Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Values	Screenshot

1.	Metrics	**Regression Model:**
		ADABOOST CLASSIFIER MODEL
		
		MSE - 0.13066
		
		RMSE – 0.36147
		
		R2 score – 0.477299S
		
		Classification Model:
		Confusion Matrix
		Accuray Score- & Classification
			`# R- Square`
			`# evaluating testing accuracy`
			`print(metrics.r2_score(y_test,pred_abc))`
			`0.47729988052568706`
			
			`# MSE (Mean square Error)`
			`print(metrics.mean_squared_error(y_test,pred_abc))`
			`0.13066666666666665`
			
			`# RMSE (Root Mean Square Error)`
			`print(np.sqrt(metrics.mean_squared_error(y_test,pred_abc)))`
			`0.36147844564602555`
			
			`cf_matrix = confusion_matrix(y_test, pred_abc)`
			`sb.heatmap(cf_matrix/np.sum(cf_matrix), annot=True, fmt='.2%')`
			`plt.title('Confusion Matrix of AdaBoost Classifier')`
			`plt.xlabel('Predicted')`
			`plt.ylabel('Actual')`
			`Text(33.0, 0.5, 'Actual')`
			 

			`print(classification_report(y_test,pred_abc))`  precision recall f1-score support 0 0.90 0.82 0.86 186 1 0.83 0.91 0.87 189 accuracy 0.86 375 macro avg 0.87 0.86 0.86 375 weighted avg 0.87 0.86 0.86 375

2.	Tune the Model	Hyperparameter Tuning –
		
		Validation Method -
		There is no greater difference between the metrics of the original model and tuned model.
			`abc_tuned = AdaBoostClassifier(random_state=49,n_estimators=11, learning_rate=1.02)`
			`abc_tuned.fit(X_train,y_train)`
			`pred_abc_tuned = abc_tuned.predict(X_test)`
			`print('Accuracy of AdaBoost(tuned)=',accuracy_score(y_test,pred_abc_tuned))`
			Accuracy of AdaBoost(tuned)= 0.8693333333333333
			
			Hence model is valid