

Project Development Phase Model Performance Test

Date	20 November 2022
Team ID	591645
Project Name	Diabetes Prediction 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	<p>Regression Model: MAE - 0.1725 , MSE - 0.1725 , RMSE - 0.4153311931459037, R2 score - 0.2072610294117646</p> <p>Classification Model: Confusion Matrix - [[239 33] [36 92]], Accuray Score- & Classification Report - 0.8275</p> <table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0</td><td>0.87</td><td>0.88</td><td>0.87</td><td>272</td></tr><tr><td>1</td><td>0.74</td><td>0.72</td><td>0.73</td><td>128</td></tr></tbody></table> <table><tbody><tr><td>accuracy</td><td></td><td>0.83</td><td>400</td><td></td></tr><tr><td>macro avg</td><td>0.80</td><td>0.80</td><td>0.80</td><td>400</td></tr><tr><td>weighted avg</td><td>0.83</td><td>0.83</td><td>0.83</td><td>400</td></tr></tbody></table>		precision	recall	f1-score	support	0	0.87	0.88	0.87	272	1	0.74	0.72	0.73	128	accuracy		0.83	400		macro avg	0.80	0.80	0.80	400	weighted avg	0.83	0.83	0.83	400	<pre># Regression Model Evaluation Metrics mae = mean_absolute_error(y_test, knn_y_pred) mse = mean_squared_error(y_test, knn_y_pred) rmse = np.sqrt(mse) r2 = r2_score(y_test, knn_y_pred) print("Regression Model Metrics (KNN):") print("MAE:", mae) print("MSE:", mse) print("RMSE:", rmse) print("R2 Score:", r2)</pre> <p>Regression Model Metrics (KNN): MAE: 0.1725 MSE: 0.1725 RMSE: 0.4153311931459037 R2 Score: 0.2072610294117646</p> <pre>knn_cm = confusion_matrix(y_test, knn_y_pred) print("Classification Model Metrics (KNN):") print("Confusion Matrix (KNN):") print(knn_cm) accuracy_knn = accuracy_score(y_test, knn_y_pred) print("Accuracy Score (KNN):", accuracy_knn) classification_report_knn = classification_report(y_test, knn_y_pred) print("Classification Report (KNN):") print(classification_report_knn)</pre> <p>Classification Model Metrics (KNN): Confusion Matrix (KNN): [[239 33] [36 92]] Accuracy Score (KNN): 0.8275 Classification Report (KNN):</p> <table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0</td><td>0.87</td><td>0.88</td><td>0.87</td><td>272</td></tr><tr><td>1</td><td>0.74</td><td>0.72</td><td>0.73</td><td>128</td></tr></tbody></table> <table><tbody><tr><td>accuracy</td><td></td><td>0.83</td><td>400</td><td></td></tr><tr><td>macro avg</td><td>0.80</td><td>0.80</td><td>0.80</td><td>400</td></tr><tr><td>weighted avg</td><td>0.83</td><td>0.83</td><td>0.83</td><td>400</td></tr></tbody></table>		precision	recall	f1-score	support	0	0.87	0.88	0.87	272	1	0.74	0.72	0.73	128	accuracy		0.83	400		macro avg	0.80	0.80	0.80	400	weighted avg	0.83	0.83	0.83	400
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2.	Tune the Model	Hyperparameter Tuning - Validation Method -	<div><div>Classification Model Metrics (SVM):</div><div>Confusion Matrix (SVM):</div><div>[[252 20] [56 72]]</div><div>Accuracy Score (SVM): 0.81</div><div>Classification Report (SVM):</div><table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0</td><td>0.82</td><td>0.93</td><td>0.87</td><td>272</td></tr><tr><td>1</td><td>0.78</td><td>0.56</td><td>0.65</td><td>128</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.81</td><td>400</td></tr><tr><td>macro avg</td><td>0.80</td><td>0.74</td><td>0.76</td><td>400</td></tr><tr><td>weighted avg</td><td>0.81</td><td>0.81</td><td>0.80</td><td>400</td></tr></tbody></table></div> <div><div>Classification Model Metrics (Naive Bayes):</div><div>Confusion Matrix (Naive Bayes):</div><div>[[242 30] [63 65]]</div><div>Accuracy Score (Naive Bayes): 0.7675</div><div>Classification Report (Naive Bayes):</div><table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0</td><td>0.79</td><td>0.89</td><td>0.84</td><td>272</td></tr><tr><td>1</td><td>0.68</td><td>0.51</td><td>0.58</td><td>128</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.77</td><td>400</td></tr><tr><td>macro avg</td><td>0.74</td><td>0.70</td><td>0.71</td><td>400</td></tr><tr><td>weighted avg</td><td>0.76</td><td>0.77</td><td>0.76</td><td>400</td></tr></tbody></table></div>		precision	recall	f1-score	support	0	0.82	0.93	0.87	272	1	0.78	0.56	0.65	128	accuracy			0.81	400	macro avg	0.80	0.74	0.76	400	weighted avg	0.81	0.81	0.80	400		precision	recall	f1-score	support	0	0.79	0.89	0.84	272	1	0.68	0.51	0.58	128	accuracy			0.77	400	macro avg	0.74	0.70	0.71	400	weighted avg	0.76	0.77	0.76	400
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