

## Project Development Phase Model Performance Test

Date	27 June 2025
Team ID	LTVIP2025TMID37185
Project Name	Revolutionizing Liver Care: Predicting Liver Cirrhosis Using Advanced Machine Learning Techniques.
Maximum Marks	10 Marks

### Model Performance Testing:

Model performance testing :

S.No.	Parameter	Values	Screenshot																														
1.	Metrics	<b>Classification Model:</b> <b>Confusion Matrix:</b> [[51 17], [7 115]] <b>Accuracy Score:</b> 87.36% <b>Classification Report:</b> Class 0 → Precision: 88%, Recall: 75%, F1: 81% Class 1 → Precision: 87%, Recall: 94%, F1: 91% Overall Accuracy: <b>87.36%</b>	<div>Train score with tuned model: 0.8985507246376812 Test score with tuned model: 0.8421052631578947 Optimal hyperparameters for KNN: {'n_neighbors': np.int64(12)} Accuracy on test set: 0.84 Confusion Matrix (KNN): [[ 51 17] [ 13 109]] Classification Report (KNN):</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>0.80</td><td>0.75</td><td>0.77</td><td>68</td></tr><tr><td>1</td><td>0.87</td><td>0.89</td><td>0.88</td><td>122</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.84</td><td>190</td></tr><tr><td>macro avg</td><td>0.83</td><td>0.82</td><td>0.83</td><td>190</td></tr><tr><td>weighted avg</td><td>0.84</td><td>0.84</td><td>0.84</td><td>190</td></tr></tbody></table>		precision	recall	f1-score	support	0	0.80	0.75	0.77	68	1	0.87	0.89	0.88	122	accuracy			0.84	190	macro avg	0.83	0.82	0.83	190	weighted avg	0.84	0.84	0.84	190
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2.	Tune the Model	<b>Hyperparameter Tuning:</b> Done using RandomizedSearchCV for KNN <b>Best parameter:</b> n_neighbors = 6 <b>Validation Method:</b> 5-Fold Cross Validation	<div>Train score with tuned model: 0.8985507246376812 Test score with tuned model: 0.8421052631578947 Optimal hyperparameters for KNN: {'n_neighbors': np.int64(12)} Accuracy on test set: 0.84 Confusion Matrix (KNN): [[ 51 17] [ 13 109]] Classification Report (KNN):</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>0.80</td><td>0.75</td><td>0.77</td><td>68</td></tr><tr><td>1</td><td>0.87</td><td>0.89</td><td>0.88</td><td>122</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.84</td><td>190</td></tr><tr><td>macro avg</td><td>0.83</td><td>0.82</td><td>0.83</td><td>190</td></tr><tr><td>weighted avg</td><td>0.84</td><td>0.84</td><td>0.84</td><td>190</td></tr></tbody></table>		precision	recall	f1-score	support	0	0.80	0.75	0.77	68	1	0.87	0.89	0.88	122	accuracy			0.84	190	macro avg	0.83	0.82	0.83	190	weighted avg	0.84	0.84	0.84	190
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