Project Development Phase

Model Performance Testing Report for "Book A Doc"

Field	Details
Date	10 April 2025
Team ID	SWTID1743701170
Project Name	Book A Doc

Model Performance Testing Overview

Aspect	Details
Purpose	To evaluate the performance of a hypothetical Machine Learning model integrated into "Book A Doc" (e.g., predicting appointment availability).
Scope	Testing the accuracy, training time, and scalability of the ML model within the MERN framework.
Team Members	- Param Yadav (22BCY10165) - Testing Lead - Vibhushit Bhat (22BSA10132) - Performance Analyst - Tushar Chahar (22BCY10231) - ML Model Tester - Saurabh Yadav (22BCY10165) - Reviewer

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Model Performance Testing Template

Test Scenarios & Results

Test ID	Scenario	Description	Metric	Expected Value	Actual Value	Status
MLT-001	Appointment Availability Prediction	Predict available slots for the next 24 hours using historical data.	Accuracy	> 85%	82%	Fail
MLT-002	Model Training Time	Train the model with 1000 appointment records.	Training Time	< 10min	12min	Fail
MLT-003	Model Prediction Latency	Generate predictions for 100 queries.	Latency	< 1s per query	1.2s per query	Fail
MLT-004	Scalability with Data Volume	Test with 5000 records.	Accuracy Drop	< 5%	6%	Fail

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Test Environment

Component	Details
Hardware	8GB RAM, 4-core CPU, 256GB SSD
Software	Node.js v18, MongoDB v6, Python v3.11, TensorFlow v2.15 or scikit-learn v1.3
Dataset	1000 synthetic appointment records (expandable to 5000)

Observations & Recommendations

Observation	Details
Accuracy Below Target	82% accuracy falls short of 85%; may need more diverse training data.
Training Time Exceeded	12min exceeds 10min target; optimize model complexity or hardware.
Latency Issue	1.2s per query exceeds 1s target; refine prediction algorithm.
Scalability Concern	6% accuracy drop with 5000 records indicates scaling limitations.
Recommendation	**Details**
Data Enhancement	Increase training dataset size and variety (e.g., add weekend/holiday data).
Optimization	Use GPU acceleration or simplify model (e.g., reduce features).
Latency Reduction	Implement caching for frequent predictions or optimize TensorFlow settings.
Scalability Plan	Test with distributed computing (e.g., AWS SageMaker) for larger datasets.

Conclusion

Aspect	Details
Summary	The hypothetical ML model for appointment availability prediction requires improvements in accuracy, training time, latency, and scalability. All tests failed to meet targets.
Next Steps	Address failures (MLT-001 to MLT-004) by implementing recommendations before submission on April 12-14, 2025. If no ML is used, document as a future feature.