



Context-Aware Movie Recommendation

Combining User History with Temporal and Contextual Signals

Company:	Agam AI Labs
Assigned to:	RAGULKUMAR S
Start Date:	16/09/2025
End Date:	22/09/2025

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Contents

1	Introduction	1
2	Task Scope	1
3	Example Pipeline (for reference only)	1
4	Evaluation Metrics	1
5	Deliverables	2
6	Contact / Questions	2

1 Introduction

The assigned task is to build a **context-aware movie recommendation system**. The system must leverage both historical user preferences and contextual signals (such as time of day, day of week, or device) to generate personalized recommendations.

2 Task Scope

- Implement a recommender system that integrates contextual information with user history.
- The system should provide meaningful **Top-N recommendations**.
- Public datasets may be used (e.g., MovieLens, Amazon Movies, Last.fm 1K).
- Participants are free to choose modeling approaches, but solutions must be reproducible.
- **No LLM usage is permitted for this task.**

3 Example Pipeline (for reference only)

The following pipeline steps are provided as possible directions. The final design is up to the assignee.

1. **Preprocessing:** Derive contextual features (hour of day, day of week, session ID).
2. **Feature Engineering:** Create user embeddings, item embeddings, and context embeddings.
3. **Recommendation Model:**
 - Baseline: Matrix Factorization with context features.
 - Advanced: Neural Collaborative Filtering with context embeddings, or sequential models (GRU4Rec, SASRec).
4. **Prediction & Ranking:** Predict scores for movies and return Top-N recommendations.

4 Evaluation Metrics

- **Recommendation Quality:** Hit@K, NDCG@K, Precision@K.
- **Diversity:** Intra-list diversity of recommended items.
- **Context Awareness:** Performance improvements compared to non-contextual baselines.

5 Deliverables

Deliverable	Description	Due Date
System implementation	End-to-end code for training and inference.	22/09/2025
Documentation	Report covering chosen approach, datasets, and evaluation.	22/09/2025
Sample outputs	Example recommendations for selected users and contexts.	22/09/2025
GitHub repository	Full codebase with README, requirements, and usage guide.	22/09/2025

Table 1: Deliverables and Timeline

6 Contact / Questions

Project owner: **Naveen V.**

For clarifications, reach out to the project owner.

*This document serves as the official specification and guideline for the assigned task. **No LLM usage is permitted.***