



PERSONALIZED MUSIC RECOMMENDATION SYSTEM

Week 6 Status Report

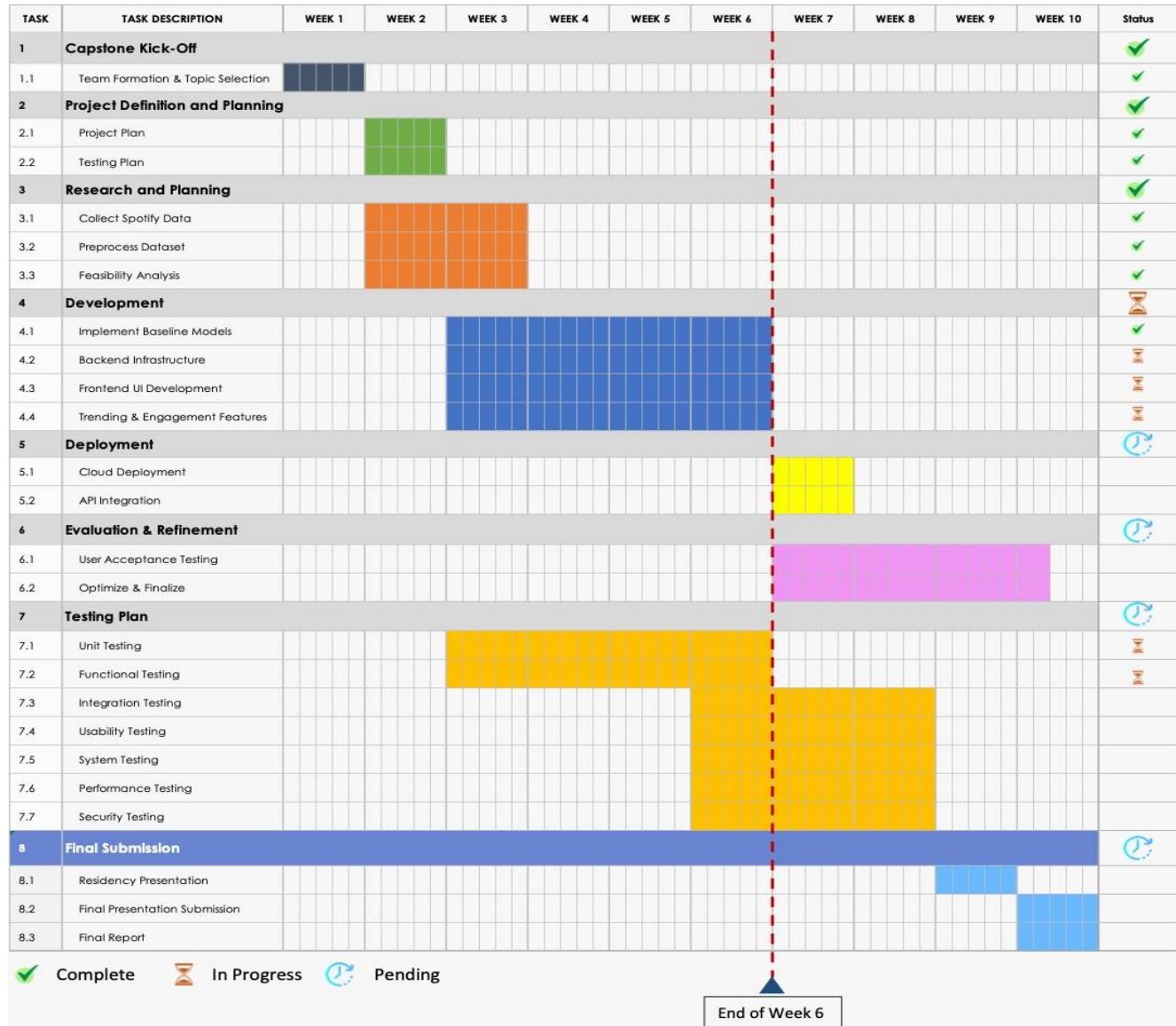
MSDSP 498 - Capstone

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Project Status Summary

The team has completed the data enrichment for locale, frontend development, database integration and progressing on backend integration, testing, and optimizing model performance. We will prioritize model enhancements, testing, and cloud deployment this week. Overall, the project progress has been aligned to our plan, however there were a few technical hurdles we had to overcome.



Progress against Plan

Phase	Planned Tasks	Current Status	Next Steps	Comments
Data Collection	Collect users' last 50 songs dataset	<input checked="" type="checkbox"/> Completed	Train Models.	Successfully gathered user interaction data
Data	Clean and preprocess 1	<input checked="" type="checkbox"/> Completed	Add Locale using	Data ready for

Preprocessing	million song dataset		LLM.	enrichment.
Data Enrichment	Fill missing locale information for songs	<input checked="" type="checkbox"/> Completed	Review and refine locale data to ensure accuracy	Initial training dataset is completed.
Database Setup	Create SQL database for user login and preferences	<input checked="" type="checkbox"/> Completed	Develop functions for CRUD operations	All inputs and app data have been migrated to a database.
Frontend Development	Build React UI	<input checked="" type="checkbox"/> Completed	Interact with backend with HTTPS to populate data	Pages have been created for each feature
Backend Development	Integrate API calls with frontend and database.	<input type="radio"/> In Progress	Enhance Chatbot, integrate API calls and optimize model performance.	Initial model training is completed.
Testing	Continue testing as per the plan	<input type="radio"/> In Progress	Start usability, system and performance testing.	Unit and functional testing in progress.
Deployment	Deploy app to cloud.	<input type="radio"/> Not Started	Cloud deployment	Estimated completion in 10 days.

Risks, Issues & Mitigation Plans

Risk/Issue	Impact	Mitigation Plan	Status
Slow LLM Processing for Locale Data	Delays in completing data enrichment	Optimize batch size, explore parallel processing	<input checked="" type="checkbox"/> Completed
UI Development Complexity	Potential delays in frontend features	Prioritize core features first	<input checked="" type="checkbox"/> Completed
Cold-Start Problem for New Users	Reduced recommendation accuracy for new users	Use genre-based or trending song recommendations	<input checked="" type="checkbox"/> Completed

Chat Feature - context awareness	Limited ability to provide better recommendations for users	Use langchain framework to create context aware bot	 In Progress
Cloud Deployment Delays	Could affect overall project timeline	Start cloud infrastructure setup in parallel with UI-backend integration	 Not Started
Testing Delays	Could impact quality assessment and issue resolution	Testing is performed in parallel to development efforts	 In Progress
Data Quality	The locale and genre data quality will impact the quality of recommendations	Leveraging public datasets and lyrics APIs along with improved LLM inference for locale accuracy	 Completed
Database Queries	Slow application response time	Optimize indexing, caching strategies, and database query execution	 In Progress
Feedback Implementation	Delays in adapting user feedback could slow down iteration cycles	Prioritize critical feedback first and phase out minor adjustments over future releases	 In Progress

Next Week's Priorities

- **Backend Development**

The backend development phase is approaching completion, with the primary focus now on integrating backend APIs with frontend and database. Seamless data flow and real-time synchronization will be crucial for enhancing user experience and maintaining application stability. Additionally, we will optimize model performance to deliver faster responses, reduce latency, and improve efficiency. A key activity will be enhancing the chatbot functionality by improving response accuracy, refining conversation flow, and incorporating contextual memory to make interactions more engaging, and create a more dynamic and interactive recommendation system tailored to individual user preferences.

- **Testing**

With unit and functional testing already in progress, the next step is to verify API endpoints, test database interactions, and validate model outputs to ensure they align with expected behaviors. Usability and system testing will commence to gather insights on user interactions and refine UI/UX for better accessibility and engagement, test end-to-end workflows, ensuring that all components function cohesively across different environments. We will continue performance testing to evaluate system speed, scalability, and responsiveness under various load conditions to determine the

application's capacity to handle peak user activity without degradation in performance.

- **Deployment**

A major milestone in the coming week is setting up the cloud environment to host the application. The deployment strategy will include configuring server instances, setting up database hosting, and ensuring secure API communication. CI/CD pipelines will be established to automate testing and deployment, ensuring smooth updates and minimizing downtime. Deployment of both backend and frontend components will be carefully managed to avoid service disruptions. Additionally, security measures will be implemented to protect user data and maintain compliance with best practices.

- **Further Refinements**

Before the app deployment, any inconsistencies or incorrect mappings will be corrected to enhance personalization and relevance in music recommendations. Any issues identified during testing will be addressed promptly, including UI/UX improvements, API optimizations, and bug fixes.