Industrial University of Ho Chi Minh City

INDUSTRIAL UNIVERSITY OF HO CHI MINH CITY

Faculty of infomation technology

BUILDING THE JT-HARMONY MOBILE MUSIC APPLICATION WITH INTEGRATED RECOMMENDATION AND SHARING

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INTRODUCTION

Designed to address the limitations of dominant digital music platforms like Spotify and Zing MP3, which focus primarily on streaming rather than interaction, this mobile application redefines the user experience by integrating high-quality music playback with a robust social networking environment. Recognizing the market need for user-generated content, the platform empowers users to upload personal covers and original compositions, bridging the gap between passive listening and active creativity. To enhance engagement, the system features an advanced AI Recommendation System utilizing Content-based and Collaborative Filtering, which optimizes suggestions according to user moods, activities, and specific preferences. Built upon a scalable Client-Server architecture using React Native, Node.js, Next.js, and PostgreSQL, the application ensures high performance and security, while the integration of Socket.IO facilitates real-time communication, creating a dynamic community where users can seamlessly share, comment, and connect through music.

MAIN FUNCTION

- Music Streaming: Search and listen to music with full playback controls.
- Playlist Management: Create and customize public or private playlists.
- User Management: Secure register/login (Social Auth) and profile management.
- Social Features: Upload covers/originals, real-time chat, and follow users.
- AI Recommendations: Smart suggestions based on mood, activity, and history via Gemini API.

AIM

This project focuses on building an Android music application featuring personalized recommendations and social sharing. It empowers users to discover new music, follow trends, and connect with a community where they can showcase their talent through covers and original songs.

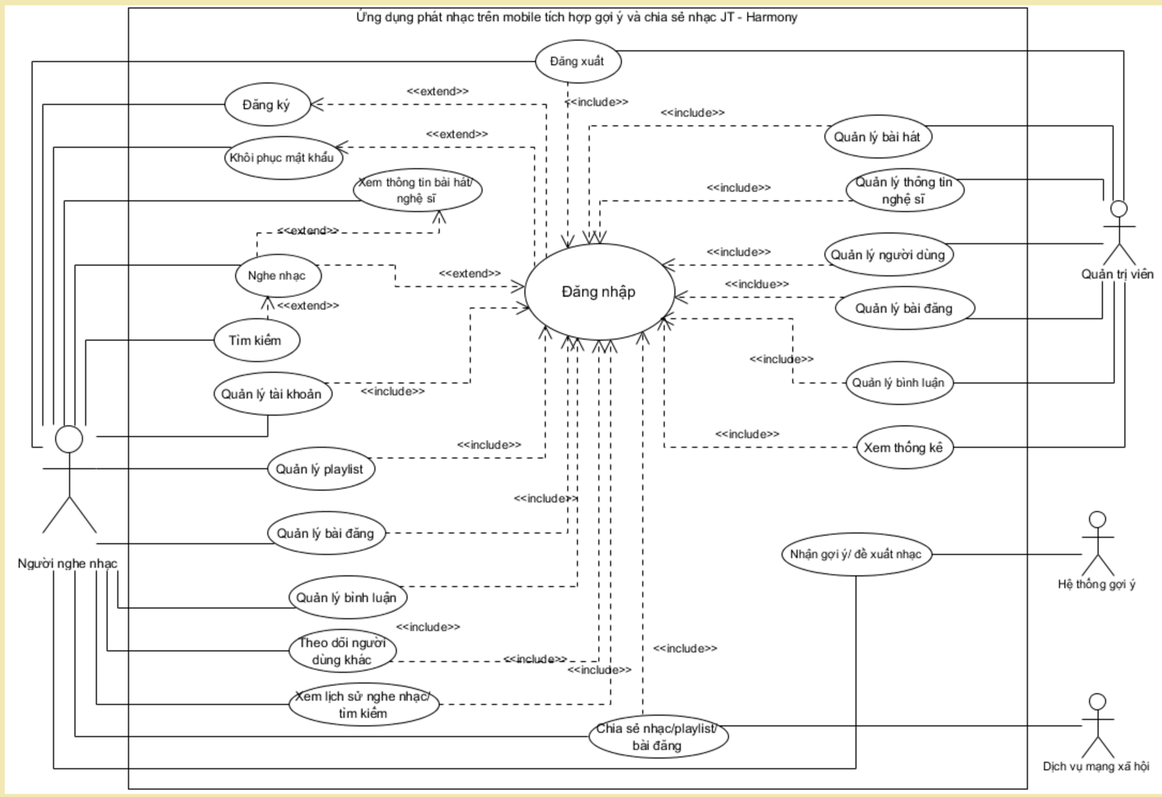
CONCLUSION

The project successfully deployed the complete JT-Harmony ecosystem (Mobile App, Admin, Server), delivering seamless streaming, playlist management, and real-time social engagement via Socket.IO. Additionally, Gemini AI was integrated to provide personalized music ecommendations.
However, the system currently faces limitations regarding automated copyright enforcement (Content ID), reliance on third-party APIs, and the lack of DRM encryption for secure offline playback, which serve as key directions for future development.

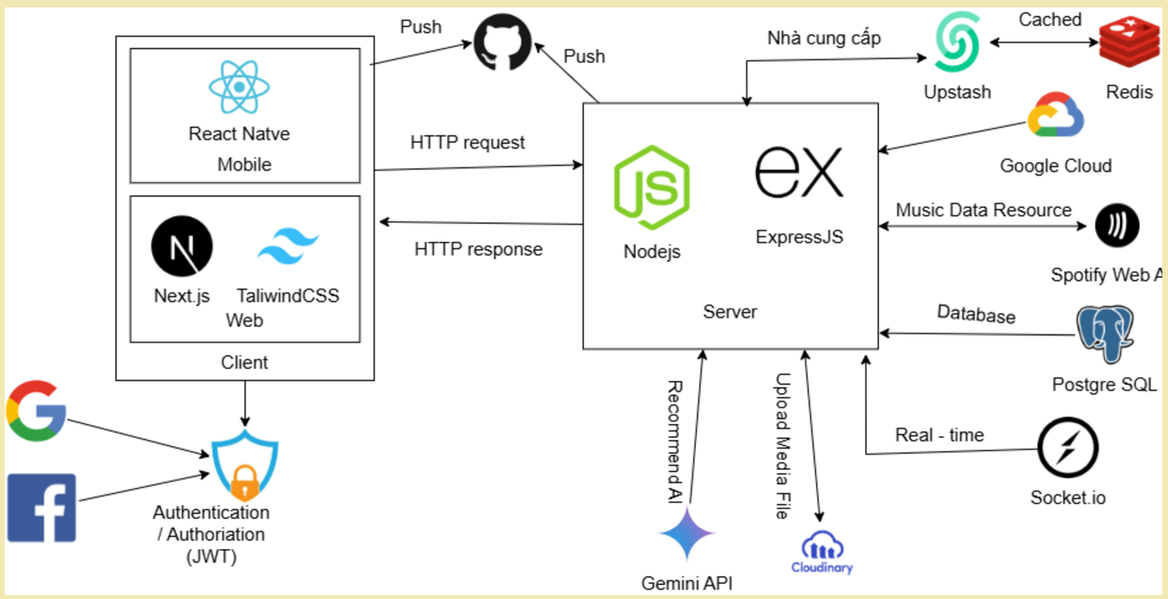
RESEARCH METHODS

The team analyzed system requirements through group discussions and benchmarked platforms like Spotify and Zing MP3. Implementation was further guided by technical research into the Spotify and Gemini APIs.

DESIGN



Usecase diagram



System architechture

REALISTIC