K.R. MANGALAM UNIVERSITY

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TOPIC -Online Radio Website (Mini Project)

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Abstract

InTune is a real-time online radio platform that combines high-quality music streaming with live user interaction via a chat feature. Designed to foster community engagement while listening to music, InTune fills the gap left by traditional radio and modern streaming platforms. This project showcases the technical implementation, user-friendly interface, and scalable architecture of InTune.

Introduction

While modern streaming services provide access to music and podcasts, they often lack real-time engagement. InTune bridges this gap by offering an online radio experience where users can chat live while streaming content.

Objectives

- Deliver high-quality, low-latency audio streaming
- Enable real-time chat for listener interaction
- Build a responsive and intuitive interface
- Ensure scalability and security

System Architecture

InTune follows a client-server architecture where the frontend communicates with a Flask backend. Real-time messages are handled using WebSockets via Flask-SocketIO, ensuring instant updates across connected clients.

Technology Stack

- Frontend: HTML5, CSS3, JavaScript
- Backend: Flask, Flask-SocketIO
- Database/Storage: localStorage (for temporary usernames)
- Streaming: Embedded audio player
- Communication: WebSockets

Features & Implementation

- Genre-based music streaming
- Real-time chat with user-defined usernames
- Responsive UI design
- Local storage for temporary user identity

Challenges and Solutions

- Buffering issues were mitigated by optimizing audio file delivery.
- Real-time synchronization problems were resolved using WebSockets.
- UI optimization was achieved with lightweight, responsive components.

Testing and Results

- Tested on multiple devices for responsiveness
- Confirmed low-latency chat delivery and audio playback
- Verified that features work concurrently under user load

Future Scope

- Develop a mobile application
- Introduce AI-powered music recommendations
- Add admin moderation tools
- Support more genres and listener personalization

Conclusion

InTune offers an innovative take on online radio by introducing a social layer to music streaming. With its real-time interaction and scalable architecture, it provides a promising base for future development.

References

- Flask Documentation
- Flask-SocketIO Docs
- HTML/CSS/JS Web Standards
- Online Radio and Streaming Technology Resources