

Project Proposal

Project Title:

Rave in the Room

Group Members:

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Background, Objective, & Motivation:

In modern times, music fans have access to attend live concerts and see their favorite artists perform. But what about the fans that can't attend concerts? Rave in the Room is a solution to this problem. Using just a phone and AR technology, Rave in the Room can help any fan host a concert virtually anywhere. With the optional help of bluetooth LED lights and either headphones or speakers, RiR can bring the concert vibe to the listener's living room. This project will use Android software (Kotlin), AR technology, IoT systems with LED lights and speakers, and a local network between these devices that send signals to each other, moving with the singers' movement and voice.

While there are existing platforms like Youtube that make accessing recordings of concerts easier, Rave in the Room is aimed to make the whole experience more immersive and fun for users.

Programming Languages, Software & Hardware:

Kotlin (Android Studio + Jetpack Compose), YouTube API (clips), ExoPlayer (video/audio playback), Firebase (authentication & user data), Adobe Premiere Pro (clip editing), Bluetooth headphones, LED lights, Android smartphone, Adobe Aero (Interactive AR software), Figma.

Expected Challenges:

Security goals: establishing defenses against danger from APIs, securing safe network connection between devices, and vulnerable code abstraction. YouTube API limitations/licensing, syncing video/audio/LEDs, preventing lag on mobile, and designing an engaging user experience.

Deliverables:

Prototype Android app, concert playback with Bluetooth integration, demo concert experience, documentation & evaluation report; secure connection and safe concert experience with set up defenses against dangers possible from APIs and network connection.

Timeline:

- **September** – Research API, select hardware, set up app framework.
- **October** – Develop core playback + Bluetooth features, basic testing.
- **November** – Add LED integration, themes, and refine interface.
- **December** – Final testing, bug fixes, full demo, documentation.