ScanNSing: Music Recognition Sing-Along App

ENGINEERING HONORS PROGRAM
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Introduction

The audience at sporting events and concerts would always enthusiastically cheer and sing in unison as support to their favorite teams and artists. However, some attendees could feel excluded from unfamiliarity with the lyrics to cheers and songs. Our mobile app, ScanNSing, aims to solve this problem by identifying songs in live music and providing corresponding lyrics in real-time. It identifies both recorded songs and cover performances, and synchronizes lyrics line-by-line with live music playing in the background. With ScanNSing, attendees of live music events would be able to identify and sing along to the songs with just a tap on the app.

Objectives

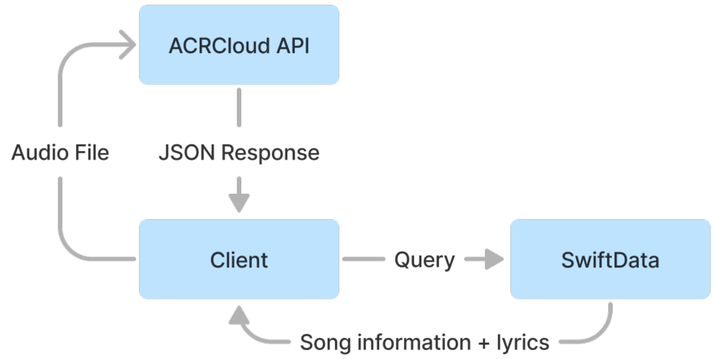
To determine app features that would best help users, I identified problems commonly faced by users and corresponding app feature ideas that would solve them:

Customer Profile	Value Proposition
Needs: • Identify songs at events • Sing along with the audience	**Solutions:** • Identifies song and displays song information • Retrieves and displays corresponding lyrics
Pain points: • Mainstream music recognition service does not recognize variations of original song • Manual effort required for lyric searches	**Pain killers:** • Supports cover song recognition • Synchronous lyrics are displayed in-app automatically after song is identified
Wants: Minimized manual interaction with the app for uninterrupted event enjoyment	**Benefits:** Only a single tap is needed to start song recognition

Design and Methodology

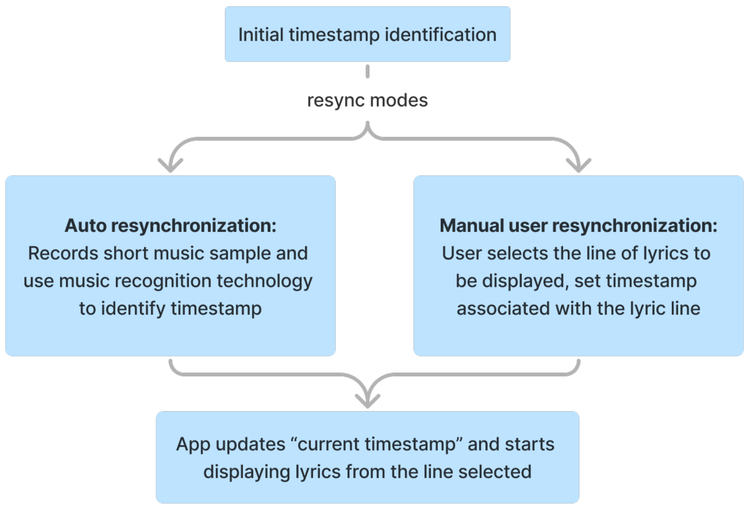
Engine Architecture

The music recognition part is powered by ACRCloud's API, which directly connects with the frontend of the iOS app. SwiftData is used as the database for the application, and is stored within the iOS app itself. The engine architecture is shown below:



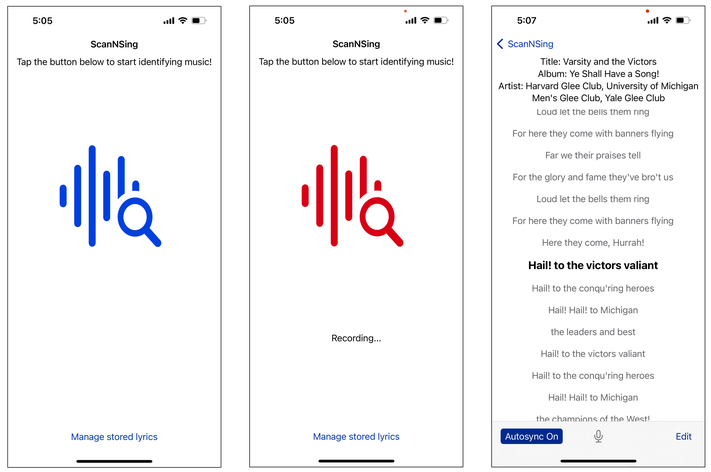
Lyrics Synchronization

To ensure the lyrics displayed are synchronized to the background music, we provide two modes for the user to select from: auto resynchronization and manual resynchronization. The two resynchronization modes are shown below:



Results

User Interface of ScanNSing



With this music recognition and sing-along app, users could now enjoy the event well with the rest of the audience. The cover song recognition feature is especially helpful in identifying songs played in live music performances. Synchronous lyrics display with auto-scrolling allows users to follow along to the song line-by-line with minimal manual effort.

Future development of this app would expand into tailoring user experience for different events. We could invite event organizers to curate a set of songs and lyrics that could be pre-downloaded ahead of time to enable offline music recognition. It would improve music recognition time for large-scale music events where internet might not be stable and accessible.

Watch the video to learn more about ScanNSing!

Acknowledgements

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