

# Chorus Identification for Music Information Retrieval

## Executive Summary

This project aims to develop an automated system that can accurately identify and isolate the chorus section from a wide array of musical tracks. The chorus is often the most memorable and commercially significant part of a song, and its identification has numerous applications in music streaming services, copyright enforcement, music recommendation systems, and live DJing performance. This project proposes to leverage audio processing techniques and machine learning algorithms to create a robust model for identifying chorus sections with minimal human intervention.

## 1. Problem Statement

This project addresses the challenges associated with the accurate identification of chorus sections within music tracks. Current music information retrieval systems often rely on metadata and manual annotation, which can be inconsistent and labor-intensive. There is a need for an automated process that can analyze audio data and reliably detect the chorus, thereby enhancing the functionality of music retrieval systems and improving user experience.

## 2. Context

The music industry has seen exponential growth in digital music services, creating a need for sophisticated Music Information Retrieval (MIR) systems to provide rich audio features and musical annotations. Traditionally, the process of music annotation, which includes identifying and labeling sections such as the chorus, has been a meticulous and subjective task carried out by trained musicologists or enthusiasts. This manual process is not only time-consuming but also prone to inconsistencies due to the subjective nature of music interpretation, leading to inefficiencies and scalability limitations. This project aims to develop and employ segmentation and classification algorithms that leverage extracted audio features to create a predictive model capable of identifying chorus sections within electronically-produced songs with a high degree of accuracy.

## 3. Criteria for Success

The success of the project will be evaluated based on the following criteria:

- **Accurate chorus segmentation/identification:** The system should achieve high accuracy in identifying the starting and ending timestamps of at least one of a song's chorus (targeting above 90%).
- **Generalizability:** The solution should be able to accurately and effectively segment and classify songs from the wide (but relatively limited) set of genres in the labeled data set.

## 4. Scope of Solution Space

The proposed solution will focus on developing a machine learning-based approach for song segmentation and classification. This project will develop a labeled, annotated data set of 353

songs from mostly electronic genres. Audio features will be extracted and combined with Spotify metadata.

## **5. Constraints**

- Computational resources: Processing and analyzing large amounts of audio data can be computationally expensive.
- Variability in genre, music composition, and production techniques that may affect chorus detection.

## **6. Stakeholders**

- Digital music streaming platforms seeking enhanced music categorization and recommendation systems.
- Academic and research institutions focusing on music information retrieval and computer science.

## **7. Data Sources**

The labeled data for the model development will come from a collection of 353 songs predominantly from electronically produced music genres, which tend to follow a more predictable structure where the chorus is usually designed to stand out as the peak moment of the track.

The structural composition of each song will be manually annotated, delineating various musical segments with an emphasis on the chorus as our target variable. Audio features will be extracted for each segment and song.