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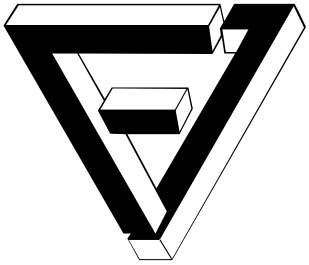

Musikk. A music streaming platform with social features.

Bachelor's Thesis

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Declaration

Hereby I declare that this thesis is my original authorial work, which I have worked out on my own. All sources, references, and literature used or excerpted during elaboration of this work are properly cited and listed in complete reference to the due source.
During the preparation of this thesis, these AI tools were used: - ChatGPT for debugging and small code corrections. - V0 for the initial styling config and layout. I declare that they were used in accordance with the principles of academic integrity.
I checked the content and took full responsibility for it.

Thesis Advisor: Mgr. Luděk Bártek, Ph.D

Abstract

This bachelor's thesis implements a music streaming platform with additional social features - live comment sections for songs and playlists, discussion forums, additional possibilities for interaction with the followed users etc.

A study is made beforehand in order to determine what users expect from the application; comparison and exploration of different existing platforms is presented in order to give a better insight into the market of similar applications.

The thesis leverages existing backend and frontend frameworks, such as Django and React, for the actual handling of the underlying data, logical processes and the interface of the platform. In addition, modern audio representation and streaming solutions, such as MPEG-DASH and HLS are used. In order for the application to feel responsive, Server Sent Events are added to provide two-way communication between the client and the server - this ensures that individual interactions are always synchronized with other users and instances of the program.

Keywords

Audio Streaming, Python, Django, React, MPEG-DASH, SSE

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Chapter 1

Introduction

In recent years, with the rapid development of the Internet, music has become an even more integral part of everyday life. It has never been easier to experience and share music — we have come a long way from sharing physical media to simply sending a link to a streaming platform of choice. Consequently, music has integrated even deeper into social interactions between people, helping them bond and share strong emotional experiences [1].

One of the direct consequences of this trend is the fast emergence of numerous music-related platforms. While some focus on traditional music journalism or statistics, others offer unlimited access to audio content. Naturally, people have started to discover and engage with music that resonates with them more frequently.

Despite this, it is surprising that none of the major social networking platforms has integrated a fully-fledged music streaming service into its ecosystem. There are only two notable exceptions:

- **VK** — a Russian social network that includes a built-in music streaming service.
- **QQ** — a Chinese streaming platform with basic social integration, mostly tailored to content authors.

However, both platforms are limited in terms of broader functionality, which will be discussed in later chapters.

The goal of this thesis is to design a music-centric platform that supports collaboration and social interaction around music.

This work is divided into the following **six** chapters:

1. **Survey Results:** Presents the outcomes of a survey illustrating how people consume music, how prevalent it is in social interactions, and why this thesis is relevant.

2. **Platform Comparison:** Compares existing streaming solutions and explores non-musical platforms that influence people's audio habits.

3. **Specification:** Details the implementation plan, overall structure of the application, and key features to be developed.

4. **Application Outline:** Describes the application's interface and functional outline.

5. **Implementation and Design:** Explains implementation details and design choices made during development.

6. **Conclusion:** Summarizes the results and discusses possible improvements.

Chapter 2

Survey Results

Chapter 3

Existing Platforms

- streaming platforms - specialized music platforms, forums - non-specialized - inst/tiktok etc

In order to better understand what instruments people use when interacting with music, it would be better to look at the already working solutions. The descriptions provided, instead of giving general information, will be focusing on the social aspects of the platforms.

3.1 Streaming Services

As it can be seen from the table (ref to survey table) and further confirmed by the recent study of the International Federation of the Phonographic Industry[**2**], nowadays, the most prevalent way of music consumption and discovery are the streaming services. There are many existing platforms, but I suggest we look only at those which are both popular and have unique features:

- Spotify. One of the most prominent social features on Spotify is the 'Spotify Jam'[**3**]. It lets people create a collective song queue which is then synchronized among all connected users. Moreover, volume, the order of songs and other aspects of the playback can be controlled individually. Another notable tool is the 'Blend' playlists[**4**]. These are playlists created automatically between two people, which contain songs matching audio preferences of both users. Lastly, 'Friend Activity'[**5**], which shows what the people you follow are currently listening to, and 'Listening Parties' that are live chats with limited capacity, which can be joined for a short time when new music is being released[**6**, **7**].

- VK Music. As was mentioned previously, this a music service integrated into the VK social network. Consequently, it is possible to send songs and playlists via private messages and add audio materials to posts in groups. VK Music also supports algorithmic playlists based on the groups that a user follows. It analyzes the audio content posted in the specific groups and

puts similar songs in the before mentioned playlists.

- SoundCloud. SoundCloud is one of the few platforms which lets its users leave comments and reactions on songs and playlists[**8**, **9**]. In addition, each user has a personal feed, consisting of his personal uploads and reposts of other's content[**10**], which is visible when visiting his profile.

- Bandcamp. Every Bandcamp user has a profile with 4 tabs - 'collection', 'whishlist', 'followers' and 'following'. By far the most interesting feature is under the 'following' tab - it is possible to list the genres which you would like to appear to other users looking at your profile. The 'whishlist' tab is also worth mentioning, as Bandcamp's model combines streaming and traditional buying of separate releases, in this tab the user is able to show what he is looking forward to listening in the future.

- Nina Protocol.

Sources

[1] Peter J. Rentfrow. *The Role of Music in Everyday Life: Current Directions in the Social Psychology of Music*. Accessed: 2025-03-21. 2012.