

# Bagzi Hip Hop World: Connecting Musicians through Web Programming and Social Networking

Blagoj Shikoski, Dijana Capeska Bogatinoska

**Abstract**—This paper presents BagziHipHopWorld, a web application and social networking platform that connects artists and facilitates the sharing and promotion of original music within the hip-hop genre. By leveraging modern software tools, users can create accounts, upload music, and engage in meaningful communication. The development process, interface design, and database architecture are discussed. User feedback highlights positive experiences, emphasizing the platform's potential for artist collaboration. Future work includes cloud integration and enhanced web security measures. BagziHipHopWorld demonstrates the transformative power of web applications in the music industry and creation of the new opportunities for aspiring musicians.

**Keywords**—web application, social networking, music industry, production, multimedia platform, hip-hop

## I. Introduction

The work presented in this paper focuses on the development of web applications using modern software tools to bridge the gap in the music world and facilitate effective communication among musicians. With social networks and online platforms dominating the internet landscape, it is crucial to leverage these technologies to empower artists and enhance their reach.

This paper introduces the development of a web application and social networking website, 'BagziHipHopWorld,' designed to provide musicians with a platform to upload, promote, and share their original music, images, and messages. By leveraging web programming concepts and popular social networking tools, this application aims to create an engaging environment where artists can connect with a global audience. Moreover, the paper describes the interface, features, and database of the web application, providing insights into its implementation.

To contextualize this work, the second chapter of the thesis presents a review of existing platforms and similar web applications that have been used in the music industry. The subsequent chapters delve into web programming concepts, popular social networking tools, and the specific aspects of DJ production and music production. Furthermore, the sixth chapter provides an in-depth presentation of the social networking web site, 'BagziHipHopWorld,' outlining its features and implementation details.

The testing and results chapter offers an evaluation of the web application's performance. Finally, the conclusion and future work chapters summarize the findings and outline potential directions for further development.

By bridging the gap between musicians and their audience, this research aims to foster collaboration and provide a platform for creative expression. Through this paper, we aim to contribute to the advancement of web applications in the music industry, opening new avenues for artists to share their talent with the world.

## II. Related Work

In the realm of digital music distribution and online platforms, several notable services have emerged, revolutionizing the way musicians connect with their audience. Noteworthy platforms that have shaped the music industry landscape include iTunes, Spotify, and SoundCloud.

iTunes, developed by Apple Inc., has played a pivotal role in enabling users to play, download, and organize digital music and video content. The iTunes Store further expanded its reach, allowing users to purchase and download a wide range of digital content, including music, TV shows, podcasts, movies, and more [1].

Spotify, another influential player in the music streaming industry, provides a comprehensive platform for users to access an extensive library of songs, podcasts, and playlists. Its collaborative playlist feature has facilitated social interactions among users, allowing them to create, edit, and share playlists [2].

SoundCloud, an online audio distribution and music-sharing platform, has gained significant popularity among artists and music enthusiasts. With its vast collection of user-uploaded audio tracks, SoundCloud has become one of the largest music streaming services, available in numerous countries worldwide. It offers both free and paid memberships, catering to a wide range of users [3].

These platforms have not only transformed the way music is consumed but have also provided opportunities for independent artists to showcase their work without the need for traditional studio equipment. SoundCloud, in particular, has been instrumental in the rise of the 'SoundCloud rap' genre, characterized by lo-fi, melody-driven sounds and unique lyrical styles [3].

In addition to music distribution, DJ production, and music production tools play a crucial role in the creation of professional-grade music. Cubase, a widely used software, offers a comprehensive suite of features that emulate classic recording studio equipment, enabling users to record, mix, and

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produce music [4]. Serato DJ Pro, another popular tool, caters to the specific needs of professional DJs, facilitating seamless DJ performances [5].

These platforms and software tools have significantly influenced the music industry and served as inspirations for the development of our web application, 'BagziHipHopWorld.' By drawing insights from their functionalities and addressing the unique needs of musicians, we aim to provide a platform that fosters artist communication and enhances their online presence.

The impact of platforms such as iTunes, Spotify, and SoundCloud on the music industry and the development of web applications has been a subject of research and analysis. Several studies have explored the transformative effects of these platforms. One study highlights the power of Twitter data in forecasting song performance and popularity, demonstrating the potential of Twitter as a predictor of song popularity [6]. Another study provides insights into the factors influencing the adoption of premium music streaming services, shedding light on consumer behavior in this context [7]. Furthermore, the Pew Research Center conducted a survey on social media use, including platforms like YouTube and Facebook, which continue to dominate the online landscape and influence music consumption and artist promotion [8].

These research studies provide valuable insights into the impact of digital music platforms on the music industry and the behavior of music consumers. They contribute to our understanding of the transformative role of these platforms and their implications for the development of web applications.

### III. Web Development: Technologies, Languages, and Social Networking

Web development encompasses a range of technologies, languages, and practices that are vital for creating dynamic and interactive web applications. This section explores the fundamental aspects of web development, including web programming, web technologies, programming languages, and the role of social networking in the online world.

#### A. Web Programming and Technologies

Web programming involves the markup and coding required for web development, which includes web content, client and server scripting, and network security. Popular languages used for web programming include HTML, JavaScript, and PHP [9]. Web programming differs from general programming as it requires knowledge of application domains, client and server scripting, and database technologies. The client-side programming focuses on accessing user data and delivering information while ensuring an optimal user experience through graphical user interfaces and security measures.

#### B. Web Development: Front-End and Back-End

All websites, regardless of complexity, are essentially a collection of files stored on a server connected to the internet. When users access a website through a browser, a client-server relationship is established, enabling the exchange of data. Front-end development refers to everything that users see and interact with on a webpage. It encompasses the creation of user interfaces (UI) using HTML, CSS, and JavaScript. HTML provides the structural elements, CSS handles the presentation, and JavaScript empowers dynamic behavior, allowing users to interact with the web page [10] [11].

In contrast, back-end development involves the processing, computation, and storage of data that occurs behind the scenes. Users do not directly interact with the back-end; instead, it supports the front-end by managing the data fetched and processed. Back-end developers work with languages such as PHP, Python, C#, and Java. Additionally, they employ databases to store and retrieve data efficiently. Popular databases include MySQL, PostgreSQL, Microsoft SQL Server for SQL databases, and MongoDB, Redis, and Cassandra for NoSQL databases [9] [10] [11].

#### C. Web Technologies and Languages

HTML (HyperText Markup Language) provides structure and meaning to web content, defining elements such as headings, paragraphs, and images. CSS (Cascading Style Sheets) is a presentation language used to style the appearance of content, including fonts and colors. HTML and CSS are independent languages; HTML represents content, while CSS represents its visual presentation. JavaScript, a client-side scripting language, powers dynamic web development and enables user interactions. JavaScript enhances the user interface and allows for the development of dynamic websites [11].

#### D. Web Development Frameworks and Tools

Web development frameworks and tools play a crucial role in streamlining the development process and enhancing productivity. Frameworks like Ruby on Rails, Django, and Laravel provide pre-built components, libraries, and patterns to expedite development and maintain code organization. Additionally, tools like phpMyAdmin facilitate the administration of MySQL databases, offering features such as managing databases, tables, fields, relations, indexes, and user permissions. It also allows for the execution of SQL statements and supports data import and export in various formats [11] [12].

#### E. Social Networking and Web Development

Social media websites have revolutionized online communication and networking. Platforms like Facebook, Twitter, Instagram, and LinkedIn facilitate connections

between users and their friends, family, and acquaintances. These platforms enable users to share photos, videos, and information, organize events, engage in chat conversations, and participate in online games. Social networking expands beyond one-on-one connections, creating a network of connections similar to real-life relationships. This online social network serves as a powerful tool for information dissemination, sharing visual content, and staying connected with a broader audience. For example, social media platforms allow users to create event pages, share details and images, and easily invite other users to events [13].

By understanding web programming, utilizing the right technologies and programming languages, and leveraging social networking platforms, web developers can create engaging online environments for artists, facilitating communication and collaboration within the music world.

## IV. BagziHipHopWorld Application Design & Development

The BagziHipHopWorld application is a multimedia platform and social networking website developed to connect the music world and provide a communication environment for music artists. It allows users to upload, promote, and share their original music, images, and messages, with a focus on the hip-hop and rap genres. The development of this application involved the use of modern software tools for web application development and social networking.

The technology stack used for the development of BagziHipHopWorld includes HTML, CSS, and JavaScript for the frontend, and PHP and MySQL for the backend. These technologies were chosen for their capabilities in creating dynamic and interactive web applications. The frontend technologies ensure a visually appealing and user-friendly interface, while the backend technologies handle data storage, retrieval, and user authentication.

The application's functionalities revolve around an authentication system, messaging system, and various sections for user profiles, music uploads, biographies, contacts, galleries, events, and artists (for illustration, see Fig. 1). Let's take a closer look at some of these features:

### a) Authentication System:

**Login:** Users can log in to the application using their username and password, which are validated against the stored data.

**Validation:** Data validation is performed to ensure the correctness and security of user inputs.

**Logout:** A logout feature is implemented to securely end a user's session and protect their information.

### b) User Profiles:

**Profile Page:** The profile page displays user information such as username, city, country, description, and profile URL.

**Profile Photo:** Users can upload and modify their profile and cover photos.

**My Songs:** Artists can upload their songs, playlists, videos, audio versions, and YouTube channels.

### c) Biographies:

**Biography Page:** The application provides a biography section for hip-hop artists, showcasing their education, relevant experience, performances, concerts, and other useful information. This enhances artist recognition and promotes events.

### d) Contacts:

**Contact Page:** Users can find artists' contact information, including their Facebook, Instagram, and email accounts. This facilitates social network integration and user-friendly communication.

### e) Galleries:

**Gallery Page:** Users can browse through a collection of pictures and images related to famous hip-hop artists, including photos from performances and concerts. (see Fig. 2)

### f) Events:

**Events Page:** The application features an events section where upcoming live performances are presented, along with details such as venue, time, and duration. Users can stay informed about events and participate. (see Fig. 3)

### g) Artists:

**Artists Page:** Users can explore profiles of different hip-hop artists, accessing information about their work and careers. The profiles provide links to their Facebook, Instagram, and SoundCloud accounts.



Figure 1. Home page



Figure 2. Gallery



Place name	Place location
Spain	Spain, Barcelona
UK	UK, London
USA	USA, New York
France	France, Paris
Germany	Germany, Berlin
Italy	Italy, Rome
Japan	Japan, Tokyo
Australia	Australia, Sydney
Canada	Canada, Toronto
India	India, Mumbai
Brazil	Brazil, Rio de Janeiro
South Africa	South Africa, Cape Town
Kenya	Kenya, Nairobi
Kenya	Kenya, Nairobi
Kenya	Kenya, Nairobi
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Kenya	Kenya, Nairobi

Figure 3. Events

The database architecture of BagziHipHopWorld consists of two tables: 'users' and 'messages'. The 'users' table stores information about active users, including their usernames, passwords, and other profile details. The 'messages' table stores the messages exchanged between users, including the username, message content, and timestamp.

The messaging system in BagziHipHopWorld plays a pivotal role in fostering communication and collaboration among users. It serves as a core feature of the social networking aspect of the application, enabling artists and users to exchange messages and engage in meaningful conversations.

Once a user has logged in to the application, they gain access to the messaging functionality. The interface provides a user-friendly environment where individuals can compose and send messages to other users within the platform. By selecting a recipient from their list of contacts or entering a specific username, users can initiate conversations effortlessly.

The messaging system ensures that users can effectively communicate their thoughts, ideas, and experiences with each other. It facilitates direct and private interactions, allowing artists to connect, share insights, discuss potential collaborations, and offer feedback on each other's work. This enhances the sense of community within the BagziHipHopWorld platform, fostering relationships and promoting artistic growth.

To maintain a smooth messaging experience, the system displays messages in a chronological order, with the most recent messages appearing at the bottom of the conversation thread. This organization makes it easy for users to follow the flow of conversation and stay up to date with ongoing discussions.

The messaging system also includes essential features such as time stamps, indicating the date and time when each message was sent. This information helps users keep track of the timeline of conversations and ensures accurate context when referring to past messages.

Additionally, the application incorporates notifications to alert users about new messages they receive. These notifications serve as prompts for users to check their inbox and promptly respond to incoming messages, fostering timely and efficient communication.

Overall, the BagziHipHopWorld application provides a platform for music artists to showcase their talent, connect with their audience, and collaborate with other artists. The combination of frontend technologies, backend functionalities, and database management ensures a seamless and engaging user experience in the world of hip-hop and rap music.



Figure 4. Messaging system

Fig. 5 is a snippet of the PHP code used for the messaging system:

```
<?php
// Messaging code snippet
$username = $_SESSION['username'];
$message = $_POST['message'];
$time = date('Y-m-d H:i:s');
// Insert message into database
$query = "INSERT INTO messages (username,
message, time) VALUES ('$username', '$message',
'$time')";
mysqli_query($connection, $query);
// Display messages
$query = "SELECT * FROM messages";
$result = mysqli_query($connection, $query);
while ($row = mysqli_fetch_assoc($result)) {
    echo "<div class='message'>";
    echo "    <span class='username'>" . $row['username'] . "</span>: ";
    echo "    <span class='message-content'>" . $row['message'] . "</span>";
    echo "</div>";
}
?>
```

Figure 5. Snippet of the PHP code used for the messaging system

## V. Testing and Results

In this section, various testing methods and the corresponding results of the BagziHipHopWorld social networking web application will be discussed. The testing includes both quality of experience (QoE) and quality of service (QoS) evaluations to assess the application's performance and user satisfaction.

### A. Quality of Experience (QoE)

Quality of experience (QoE) is a measure that reflects the users' experience and interaction with a specific application. To evaluate the QoE of the BagziHipHopWorld application, a survey was conducted using Google Forms. Forty participants were asked several questions to gauge their experience with the web app. Additionally, respondents had the opportunity to provide feedback on aspects that could be improved.

QoE Feedback (Survey Results):

*Ease of Use:* 88% responded "yes," 8% responded "average," and 4% responded "no."

*Security:* 80% rated it as "high," 12% as "medium," and 8% as "low."

*User Interface:* 87% rated it as "excellent," 8% as "good," and 5% as "average."

*Effectiveness:* 70% rated it as "high," 16% as "medium," and 14% as "low."

The majority of the respondents had a positive experience with the BagziHipHopWorld social networking website. The findings from this chapter indicate that the application has met most of the expectations set forth in the thesis.

The survey results indicate that users appreciated the simplicity and ease of use of the social networking web application. The security measures implemented in the application were also well-received. Furthermore, respondents found the user interface to be excellent, contributing to a positive overall experience. The results confirm that the web app has successfully fulfilled the expectations of both the developer and the users.

### B. Quality of Service (QoS)

Quality of service (QoS) focuses on measuring the performance of a service rather than the user experience. In the case of BagziHipHopWorld, QoS testing was performed using the Chrome DevTools browser extension, specifically the Lighthouse audit feature available in Google Chrome/Chromium. The Lighthouse audit assesses performance, best practices, availability, and search engine optimization (SEO) for each web page.

QoS Evaluation Results:

*Performance:* Scored 94 out of 100.

*Accessibility:* Scored 100 out of 100.

*Best Practices:* Scored 85 out of 100.

*SEO:* Scored 100 out of 100.

Figure 6 demonstrates the QoS evaluation results for BagziHipHopWorld. The application achieved high scores across various metrics, indicating excellent quality of service. The performance, accessibility, best practices, and SEO aspects were particularly strong, further validating the application's robustness and efficiency.



Figure 6. BagziHipHopWorld QoS

These results validate the successful development and implementation of the BagziHipHopWorld application, showcasing its high-quality user experience and performance characteristics.

## VI. Conclusion and Future Work

In this paper, we have explored the development and evaluation of BagziHipHopWorld, a web application and social networking platform designed to connect the music world and provide a platform for musicians to upload, promote, and share their original music, images, and messages. Through the use of modern software tools, we have created an engaging and user-friendly interface for users to interact and communicate within the music community.

The development of BagziHipHopWorld has demonstrated the potential of web applications and social networking platforms in empowering musicians and enhancing their online presence. By leveraging the power of the internet, musicians can now reach global audiences and establish themselves within the industry, even without the resources and support of traditional music industries. The online streaming capabilities of BagziHipHopWorld and similar platforms have opened up new opportunities for amateur musicians to showcase their work and contribute to the growth of the music industry.

The positive results obtained from the quality of experience (QoE) survey indicate that BagziHipHopWorld has fulfilled users' expectations in terms of ease of use, security, user interface, and effectiveness. Users have expressed satisfaction with the application, highlighting its simplicity, user-friendly design, and effective communication features.

Looking ahead, there are several avenues for future work and enhancements to BagziHipHopWorld. One area of focus is the integration of cloud services to improve scalability, security, and data management. By leveraging cloud technologies, we can ensure a secure and reliable environment for storing user data and expand the application's capabilities.

Additionally, incorporating web security solutions will be essential to safeguard user information and protect against potential threats. By implementing robust security measures, we can enhance the trust and confidence of users, ensuring their privacy and data integrity.

Furthermore, future development can explore the potential of artificial intelligence (AI) and blockchain technologies. AI can be utilized to enhance user experiences, provide personalized recommendations, and automate certain processes within the application. Blockchain technology offers opportunities for transparent and decentralized data management, ensuring data integrity and fostering trust among users.

By integrating these advancements, BagziHipHopWorld can continue to evolve and meet the changing needs of its users. The application can contribute to the modern and elegant lifestyle of users by leveraging popular ICT solutions and providing continuous innovation.

In conclusion, the development of BagziHipHopWorld has demonstrated the power of web applications and social networking platforms in connecting musicians, promoting their work, and fostering collaboration. With future enhancements and the integration of advanced technologies, BagziHipHopWorld can continue to support musicians' growth and contribute to the vibrant music community online.

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