



REVITALIZING INDIA'S CULTURAL HERITAGE

Fusion of tradition and technology

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Abstract : In a changing world, India's cultural heritage, including classical dance forms, is losing attention due to modernization and shifting priorities. Our project aims to blend tradition with technology, using web design and machine learning to create a user-friendly platform. This platform will enhance search experiences for dancers and enthusiasts using recommendation systems, while fostering collaboration between dance institutes and filmmakers. The goal is to revitalize and promote classical Indian dances, bridging the gap between tradition and contemporary elements, and inspiring similar efforts globally for cultural preservation and awareness. Our project create opportunities to talented and enthusiastic people who wants to shine in their dance forms. And this also notify us about the workshops ,dance events and auditions that are taking place on various locations. This project helps in developing the community among various dance institutes and also among the people who wants to excel in the field of dance with a immense love on the skill they have learnt. This Prompts cross-cultural exchanges among dance enthusiastic.

Keywords : Indian Cultural Heritage, Web Development, User friendly, Recommendation engine, dance enthusiasts and institutes ,collaborations system, workshops, auditions, cross cultural exchange.

I. INTRODUCTION

India is popular for its dance forms. India is one of the few countries that always give high priority to its culture. Indian Dances plays the most important role in the world of art and culture. But in today's fast-changing world, India's cultural heritage, particularly its classical dance forms, is facing a decline in attention and understanding. Most of the Dance forms had lost its existance and many are unknown to the present generation kids. This made shut down of many dance institutes and the dancers are facing lot of problems because of lack of opportunities in their field. In the view to regain the beauty of dance forms and bring back the smiles of many dancers we have designed a user friendly website, that can be easily accessed by non-technical user. And also with the proliferation of digital platforms, personalized ways to explore and engage with different dance forms and individual seek convenient for the users we have designed recommendation systems. The provides tailored recommendations based on their behaviors and preferences. Our project, "Revitalizing India's Cultural Heritage", endeavors to reinvigorate these traditional art forms by blending tradition with modernity . When the technology and tradition with modernity. When the technology and tradition combined together it definitely gives a great result. Our Project helps dance enthusiastic to learn dance of different forms, and helps the dance institutions to come back with spirit to spread the beauty of Indian dance forms and also provides opportunities to the people who are talented and has immense love towards their dance forms. And it also helps Film Makers to identify the new talent and spread the essence of the art forms. We're using web technologies and machine learning to create an interactive platform that enhances the experience for dancers, enthusiasts, and potential collaborators. The ultimate aim is to rekindle an appreciation for India's cultural heritage and inspire similar efforts globally for its preservation and promotion.

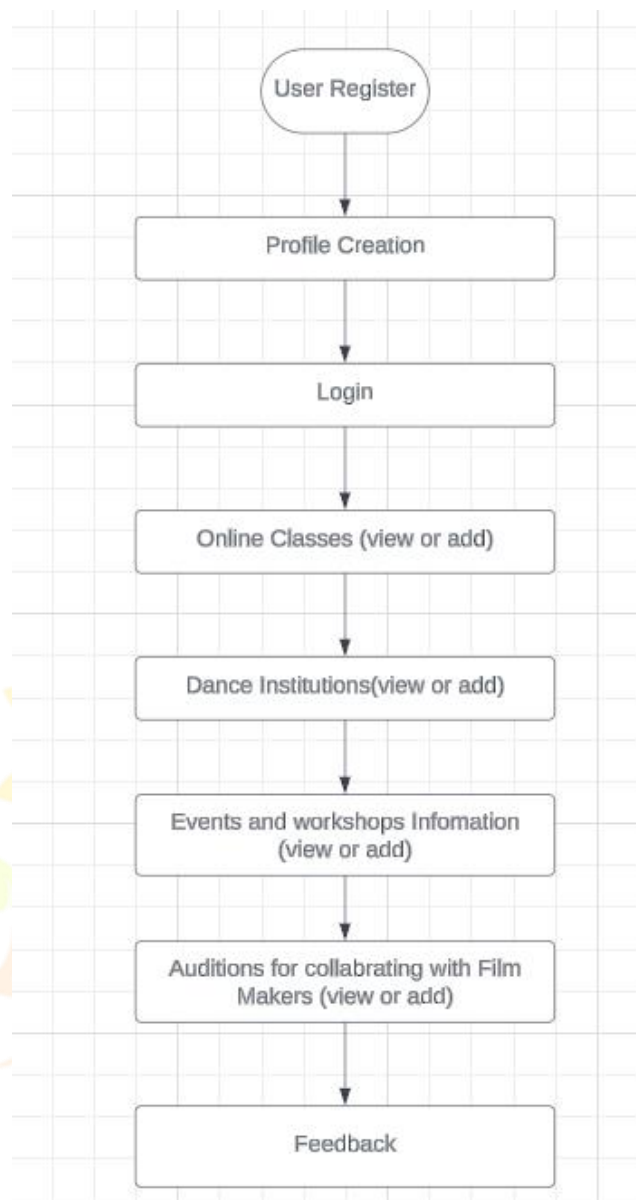


Fig-1: Flow Diagram Of Proposed System

II. LITERATURE SURVEY

In this modern era, the dance forms of traditional forms does not exists. And many dance institutes are being shut down and many dance enthusiastic people lost their hope in their art forms because of lack of opportunities. There are few articles and journals that describe the lack of attention to these dance forms and institutes. Indian dance forms mainly the classical dance forms has rich cultural heritage all over the world, but due to rapid globalization and attraction towards to western culture has raised many issues in our cultural heritage. To find a better solution to this issue our project aims to utilize the modern technology like machine learning and web technologies to create a user friendly platform that helps to regain the Indian Heritage by giving an opportunities to dance institutes and dance enthusiastic. This literature survey has designed based on various cultural preservation journals , technology integrations and community creation in the regard of traditional dance forms. We have gone through various awareness and cultural preservations studies by some of the scholars like Mukherjee(2018) and Gupta(2020) who discussed about the situation of dance forms due to modernization. And also the idea of creating virtual dance classes to attract wider audiences to enhance the cultural awareness and reach of art forms is from the research work by Sharma(2019). There are many such works that by Ramaswamy(2017) that explores the use of VR(Virtual Reality) and Augmented Reality(AR) in dance education. This provides immense learning experiences to preserve dance heritage. The idea of using efficient mobile applications to teach classical dance techniques and facilitating practice sessions for learners right from beginners to advanced learners is by the studies done by Patel and Desai (2021). Research by Sundaram and Menon(2018) fosters the collaboration between dance enthusiasts, institutes and artists which leads to exchange of knowledge and resources. And some discussions made by Roy et al. (2020) through the initiatives like Dance Network Project (DNP) in India, has demonstrated about the Community engagement and networking that is facilitated by the social media platforms. There are also some Machine learning projects that helps in creating knowledge about various “Mudhras” the dance movements . The recent growth in Computer Vision and Machine Learning has enabled the recognition and automated analysis of the dance movements. These algorithms for Choreographic pattern analysis and gesture recognition in classical dance forms are studied by Khan et al. (2021) and Singh et al . (2022). There are also some online websites that fosters the dance learners to learn various dance forms through online resources. From all these researches and journals many people are working for the growth of Indian Dance forms and also creating an opportunity to dance seekers and awareness about problems faced by the people and dance institutes. All this researches has paved path for our project “Revitalizing Indian Cultural Heritage” through a user friendly website named “NrityaSahachara” which achieve one solutions to various problems faced by dance institutes and dance enthusiastic. In “NrityaSahachara” we provide one common platform for dance institutes , dancers, dance seekers, film makers . In our website the users can login and learn various

dance forms, the dance institutes can add their institute into our website so that they can grow and many users can also join their institute and learn in offline. The details of the institute are also mentioned in our website through which the learners can contact them .And also and user can add the events and workshops that are taking place in and around their locations to provide awareness about the various art forms and through which many learners can visit those locations to watch the beauty of art in reality. The filmmakers can login into our website and can search for fresh talent through announcing about the auditions, the required dance form they need. This helps many dance enthusiastic to gain opportunity and reach great heights in their dance forms. Many researches have been done on recommendation systems that explored various techniques like , content based filtering ,collaborative filtering, and hybrid methods. Collaborative filtering methods such as KNN, leverage user-item interactions to generate recommendations. To measure the similarity between user preferences and items Cosine similarity metrics have been widely used for recommendation systems. But there were only few studies that merges KNN and Cosine similarity metrics in the regard of dance forms Recommendation Systems. This the literature survey of our journal.

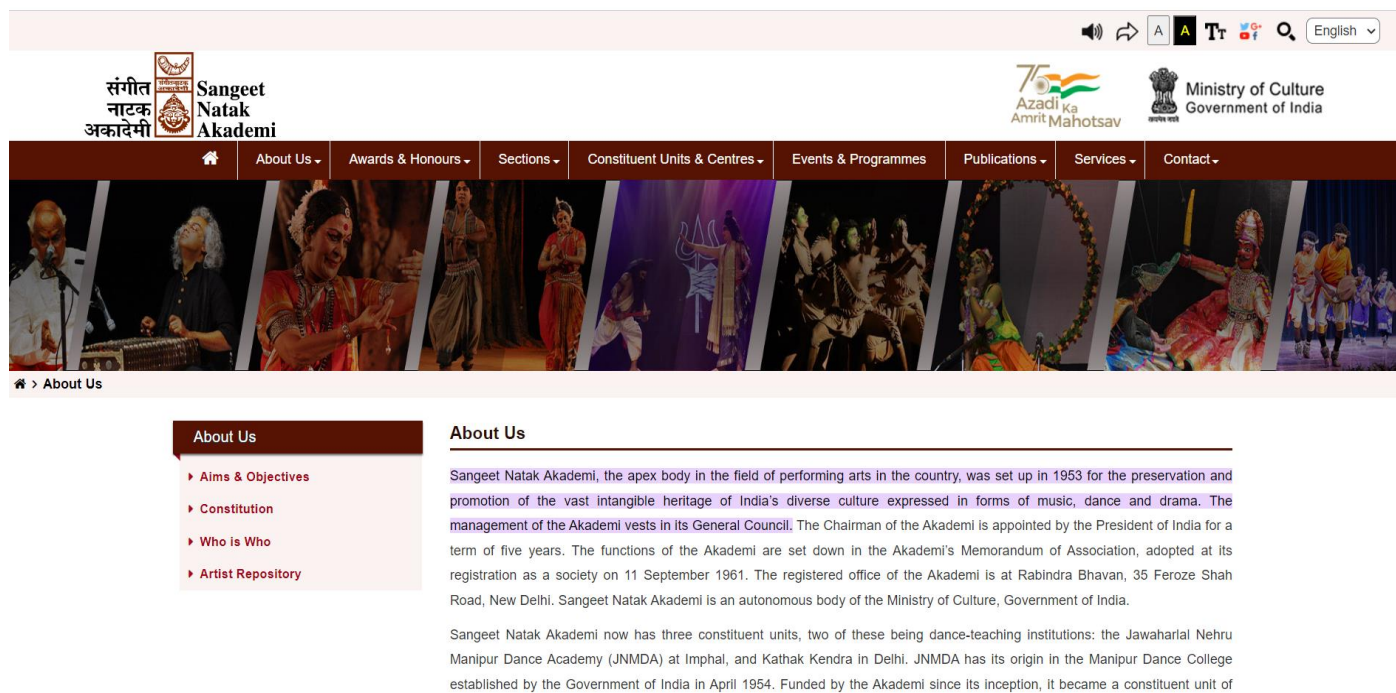


Fig-2: These are some of the existing website that encourages the dance forms and artists.

The existing system just show cases the various talents in India. It preserves the cultural heritage of our country. It discuss about various art forms like music, dance and drama etc. The award and honors received by various people in various fields .

III. METHODOLOGY

The methodology of our website is very simple. As a basic website we have used various web development technologies to implement and host our website. Initially we have designed the appearance of the website with front end technologies like HTML, CSS and JAVASCRIPT. To dynamically access the website and database we used various technologies like FastAPI, PyMongo, Starlette Session Middleware, UUID Hashing. To deploy our website we used Uvicorn, so that user can access our website through internet.

3.1 FastAPI :- FastAPI is one of the fast, latest and modern web framework that is used for building APIs with the help of Python 3.8+ that works based on using standard Python type hints. It will serve as the backend framework for our website, providing the API endpoints and handling HTTP requests and responses. You'll define routes for login, register, logout, fetching classes, institutions, auditions, and events data from the database, and handling form submissions for adding new classes, institutions, auditions, and events.

3.2 PyMongo:- The PyMongo distribution consists of tools that is used for communicating with the MongoDB database from Python. PyMongo will be used to connect your FastAPI backend to the MongoDB database from Python. PyMongo will be used to connect your FastAPI backend to the MongoDB database. You'll perform CRUD operations (Create, Read, Update, Delete) on the database to store and retrieve data related to classes, institutions, auditions, events, and user authentication.

3.3 Starlette Session Middleware:- Starlette's session middleware is one of the simple session middleware that is used for Starlette which helps in maintaining server side sessions with the help of Starlette. This will manage user sessions and store session data securely. This will be crucial for implementing user authentication features like login, logout, and maintaining the user's authenticated state across different pages of the website.

3.4 Uvicorn:- Uvicorn is called as an ASGI web server that is implemented for python.It will host our FastAPI application and serve it over HTTP or HTTPS. You'll deploy your website using Uvicorn to make it accessible over the internet, ensuring high performance and reliability.

3.5 UUID Hashing:- UUID hashing has two versions that are used to generate name and namespace identifier with the help of hash function. It allocates the ID's based on the time sequence instead of randomly generating the IDs. It will be used to generate unique identifiers (IDs) for entities like classes, institutions, auditions, and events. These IDs will be used as primary keys in the MongoDB database to ensure each entity has a unique identifier.

IV. PROPOSED SYSTEM

The Block diagram illustration is shown in fig.2. describes the process or methodology need to follow by the users of the website.

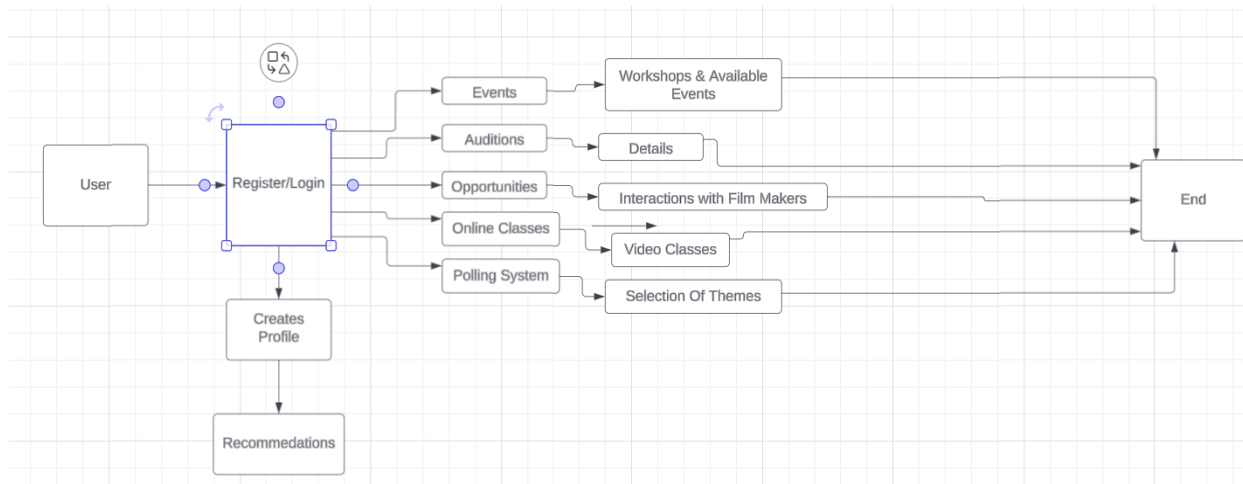


Fig.3 : Methodology of the website for all the users

Our project has brought all the existing features along with the additional features that only concentrates on dance forms in our country. Our project named “NrityaSahachara” as mentioned is a common platform for all the dance enthusiastic, dance institutes and dance seekers. Initially the users need to register and creates profile based on which we recommended the users to make search process easy for them. After completion of the registration process then the user will login into the website and can access the various fields in the website. The Home page gives details about our website and various dance forms like Bharatanatyam, Kathak, Kuchipudi etc. And the dance seekers can learn all forms of dances virtually and also they can learn it from various gurus whom they admire. They can also explore various events that are conducted by various institutes and organizations related to dance, so that can know more about various skills and artists in dance industry. And also dance enthusiastic can find about the various dance institutes around them and can also contact them and know the details. If any dance institute wants to take part of our website, they can directly login into our website and can add their institute details in the website, so that many interested people can know about their institute. Similarly we can also add the events and auditions in the process. The Polling System can help the dance performers to know about the popular and most loved themes by various users. So that they can performance based on these themes, for creating interest for the audience. The auditions portal help the Film Makers and also the talented dancers who are waiting for a better opportunity, can get a chance to act in the films. The Film Makers will post about the role and the dance form which they require. So that it will be easy for them and also for the people who are searching for an opportunity. These are the uses and procedure to how to work in our website

V. RECOMMENDATION SYSTEM USING KNN AND COSINE SIMILARITY METRICS FOR ENHANCING DANCE FORM :-

In recent times, various domains like cultural exploration, sports and entertainment has been using recommendation systems to gain significant attractions for their users. So in our project we have been using Recommendation System for making search experience in easy and better way. We have developed and enhanced a recommendation system for dance forms that utilizes the K-Nearest Neighbors (KNN) algorithm coupled with cosine similarity metrics. This system tracks the user clicks and also explores the matches with other users to provide personalized recommendations. By employing cosine similarity metrics within the KNN framework, the system computes distances between users and recommends dance forms with zero clicks. Moreover, it incorporates average ratings from similar users to refine the recommendation process, thus enhancing user experience and engagement. We have followed a methodology that is followed many studies, but their only few studies that uses recommendation systems in the regard of dance forms.

The recommendation system follows a multi-step process:

- 1. Tracking based on User Clicks :-** The system tries to understand user preferences by tracking the user interactions with various dance forms.
- 2. Finding Similarities between other users :-** The recommendations are given based on the other users preferences who has similarities in behavior and also preferences mentioned in their profiles.
- 3. Calculating Cosine Similarity :-** By utilizing cosine similarity metrics, the system calculates the similarity between the target user and other users, as well as between dance forms.
- 4. KNN Algorithm:-** Based on cosine similarity score that is calculated, the system identifies the nearest neighbors. Thus the KNN algorithm is applied.

5. **Generation of Recommendations:-** Based on the preferences of similar users and their average ratings the dance forms with zero clicks are recommended to the user.

Through these steps and evaluation , the proposed system recommends the results by providing personalized dance form recommendations. The accuracy and relevance of recommendations can be enhanced by leveraging average rating from similar users. If we still want to optimize the system we can iteratively refine and validate the large datasets and various user demographics.

$$\text{similarity} = \cos(\theta) = \frac{\mathbf{A} \cdot \mathbf{B}}{\|\mathbf{A}\| \|\mathbf{B}\|} = \frac{\sum_{i=1}^n A_i B_i}{\sqrt{\sum_{i=1}^n A_i^2} \sqrt{\sum_{i=1}^n B_i^2}}$$

Fig-4 :- Cosine Similarity Formula

VI. RESULTS:-

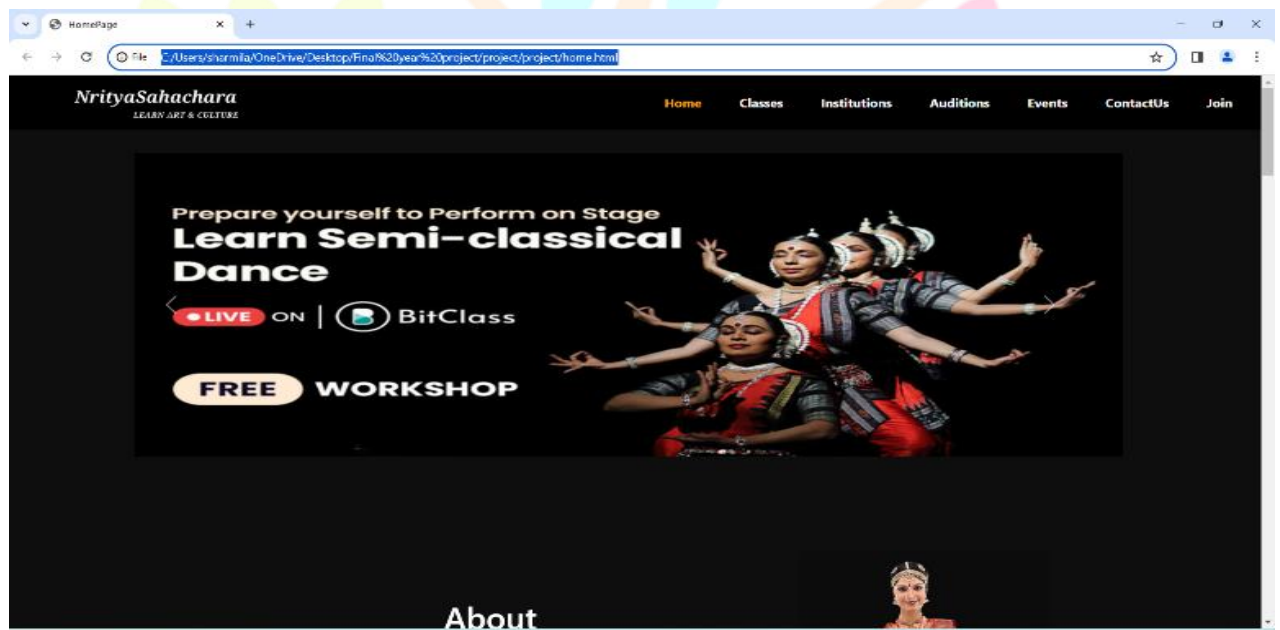


Fig-5 : Home page of NriyaSahachara

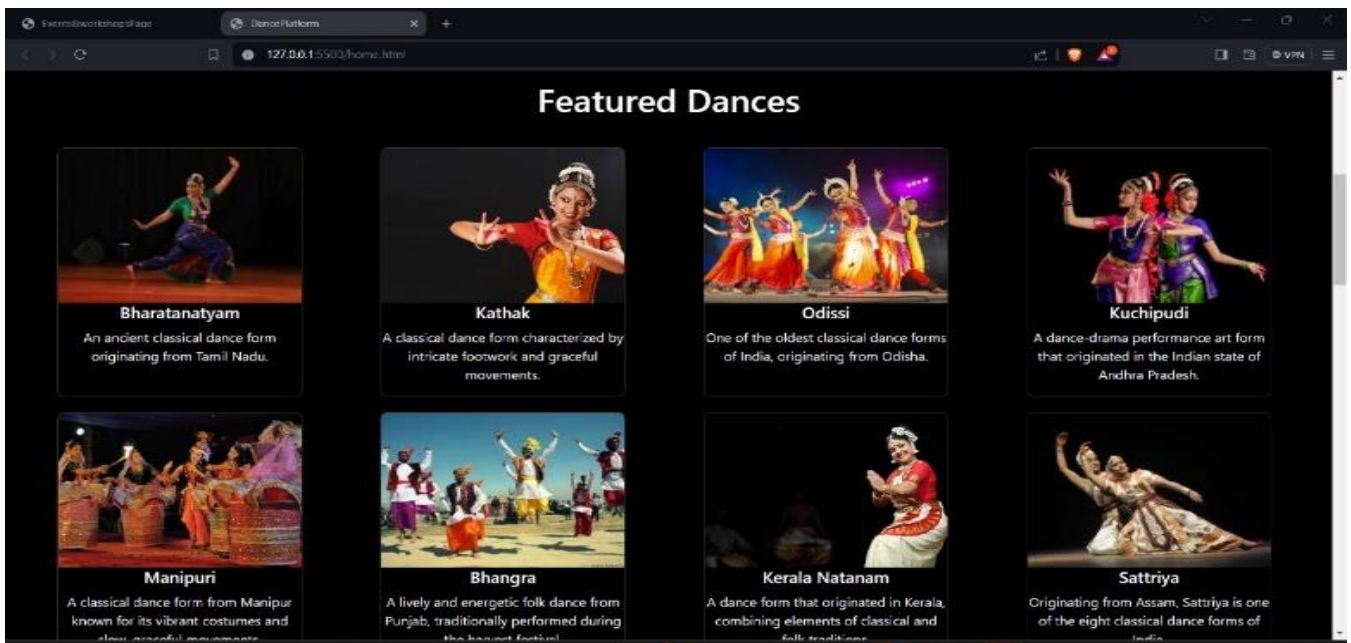


Fig-6: Features Dances of NrityaSahachara

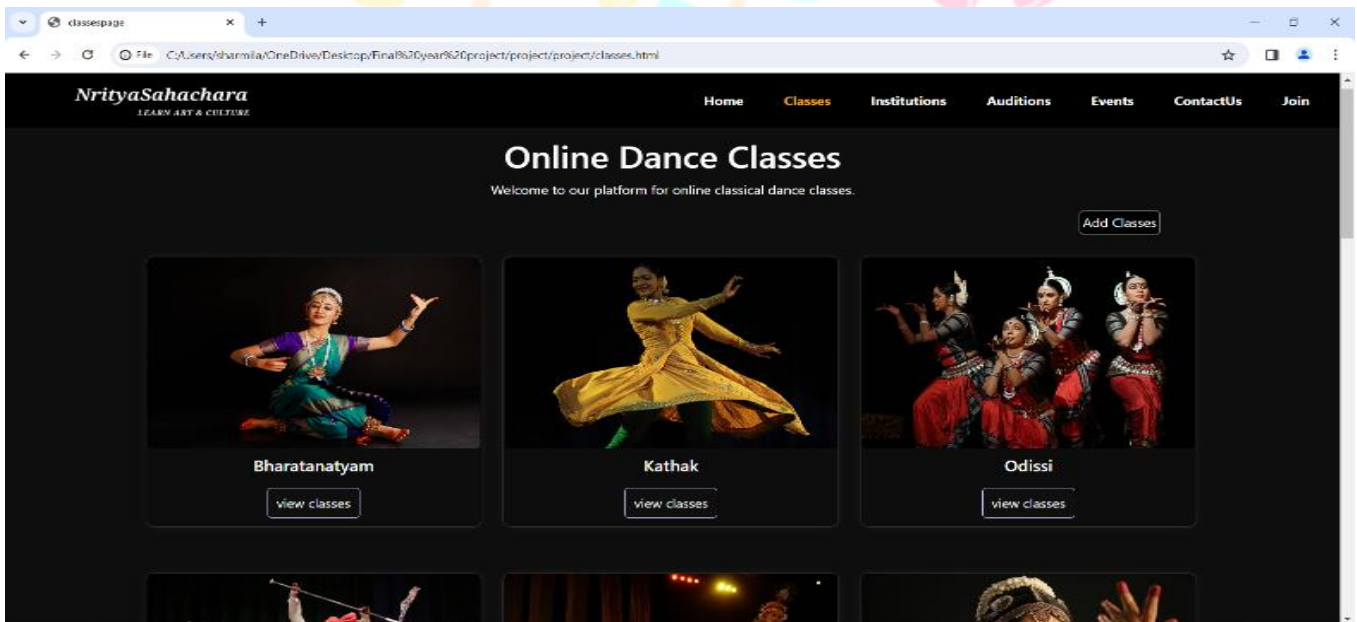


Fig-7: Online Classes for diverse dance forms

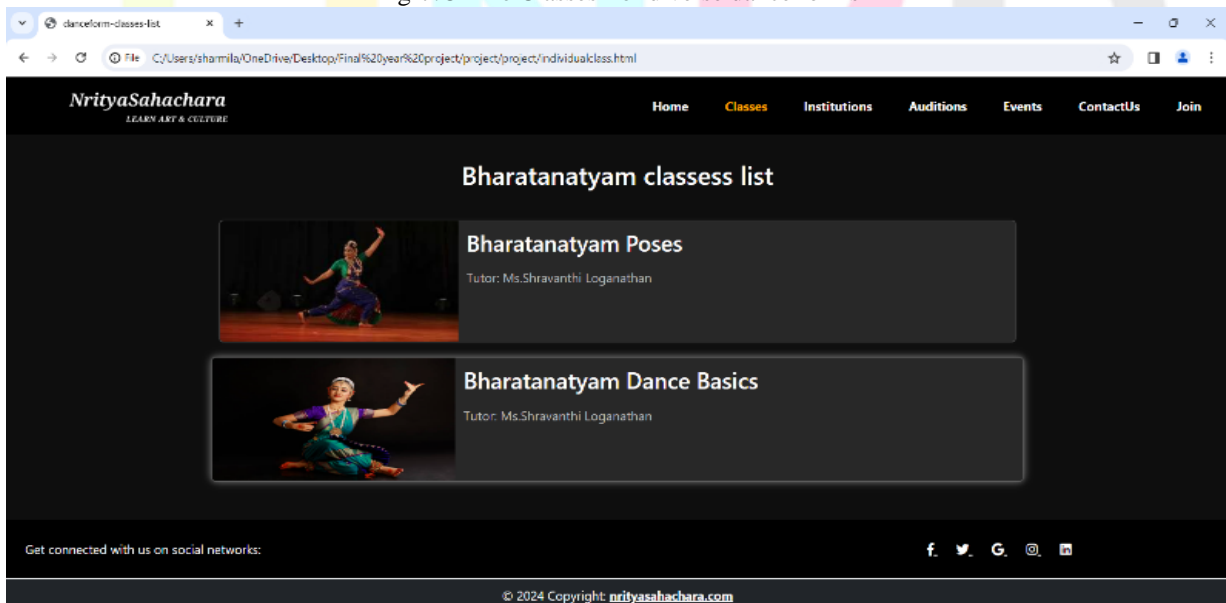


Fig-8: Bharatanatyam online classes

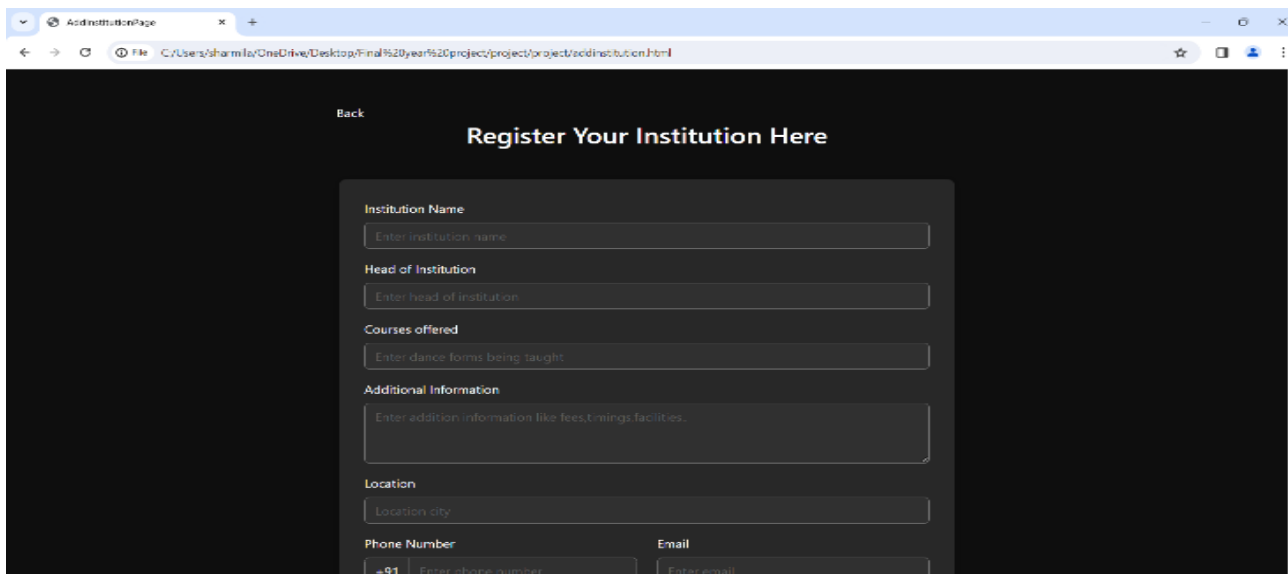


Fig-9: To add Dance Institutes

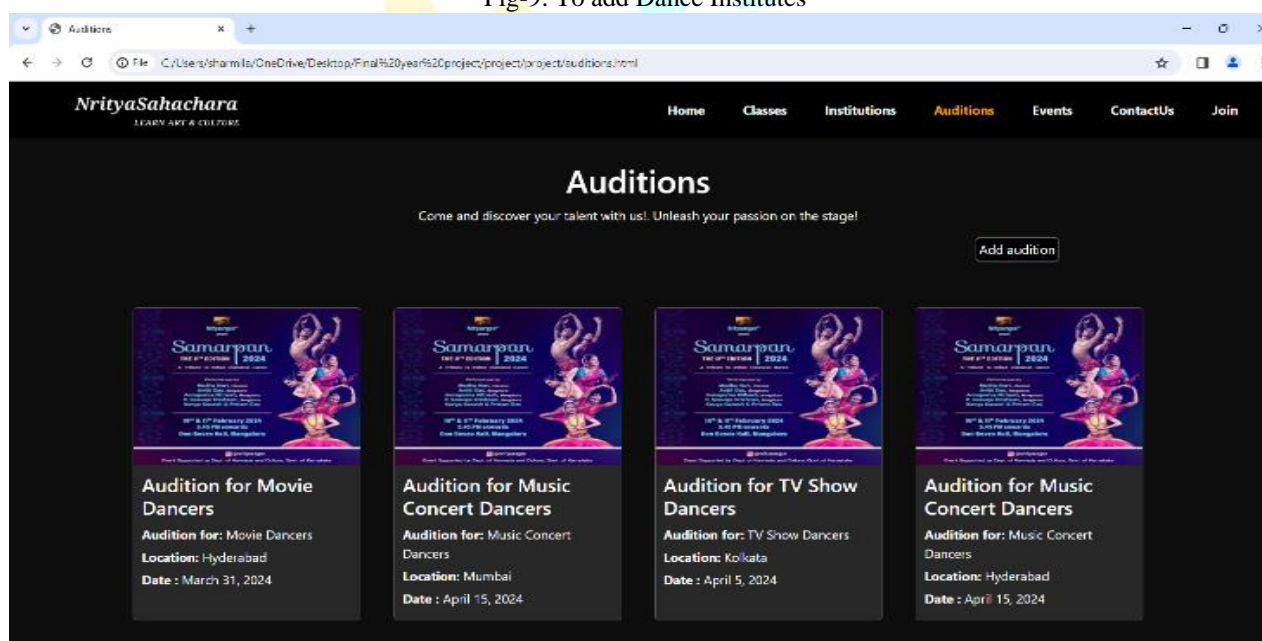


Fig-10:- Available Auditions

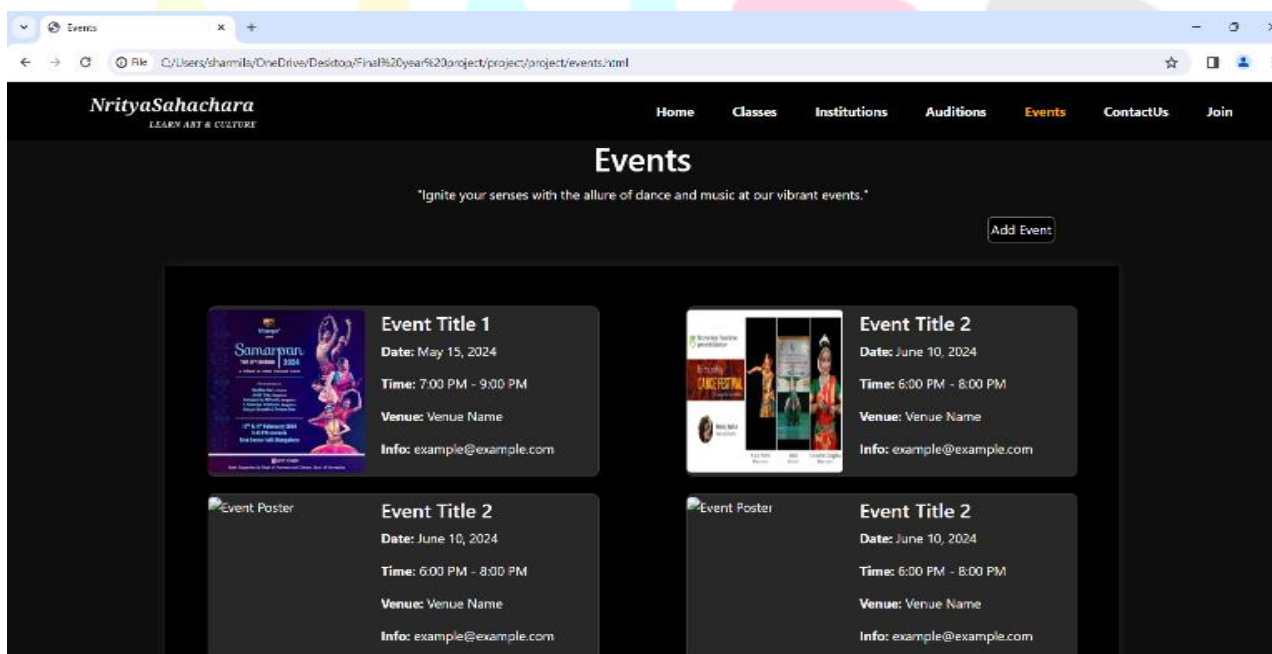


Fig-11:- Upcoming events

VII. CONCLUSION

In conclusion, our project aims to combine both tradition and technology. The project provides user friendly platform that also provides recommendations to the users about their interest in various dance forms. This also promotes the contributions among the dance enthusiastic and Film Makers. This helps in expanding the dance form in wide range. Also the users can virtually learn the online classes that comes under classes panel. The users also add the institutes, events and auditions. The system generates personalized recommendations that is completely based on user preferences and similarity with other users and average ratings. In future we will focus on extending the system's capabilities, such as integrating temporal dynamics and incorporating additional features for a more comprehensive recommendation framework .This is all about our project. Our goal is to reinvigorate and promote Indian Classical dances all over the world. And wants to bridge the gaps between the Tradition and fast growing modern world. This inspires many dancers to grow in their field and continue in the same field. The “NrityaSahachara” has a great scope in future, as there are many people who are interested in Indian Culture from India and also from other foreign countries. So their will be good use of this project and can contribute some efforts in the growth of Indian Cultural Heritage

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