AI-Based Yakshagana Scrip-Matching Performance

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***Abstract*—When you hear the word Yakshagana you can feel the power in it. Yakshagana is one of colourful, traditionally practiced having historic background, art of Karnataka, India. It is found in many parts of Karnataka. It is combination of thaala, music, naatya, mudra and, bhavana. Yakshagana the word if divided then yaksha and Gaana yaksha is one of the gods under Devendra and Gaana means music. There aren't many systems that can teach more about this art. Our system is build using Ml training TF-IDF and video and text extraction. Add voice and then perform video to text conversion. Different prasangas have different story and meaning behind them. Each represent one each meaning from ancient stories of Mahabharat and Ramayana.**
Teaching such art to people and developing these types of arts is important.

I. INTRODUCTION

Traditions or Traditional arts play significant role in developing one's life. It acts as a rock bridge that connects current generation to previous generation.
For example, Yakshagana the art of generation, tradition, moral, myths and practices practiced in Karnataka, India.
Alike Bharathanatya Yakshagana creates magic with music, dance, script, that is inspired from ancient story tellers, and books like Ramayana and Mahabharat. Yakshagana are performed in a open area where there will thousands people gathered together it is like entertainment after long day of working.
However, despite the importance of this type of art in preserving tradition, there exists a major challenge in documenting these performances in the current era. As most artists perform through improvisation, the oral performances never match the texts provided as documentation.
Previously, this could be done using manual labor—the researcher would spend hours comparing the video recording to the old documents. This process not only takes time but also involves numerous risks of errors. To make the procedure more efficient, our project suggests a new intelligent computational model. With the help of machine learning algorithms, we are able to convert the dialogues into data that can be used by the computer to recognize patterns in the language and align the performance with its source text. In the course of our experiment, we were able to determine the optimal algorithm for categorizing these specific features of the theatrical genre. The use of the computational model will ensure that Yakshagana will become a better-known tradition among international scholars and be preserved in the modern world.
In addition, our approach may help preserve the tradition in the digital environment and contribute to further digital archiving of traditional art forms.

II. LITERATURE REVIEW

The advancement in technology in the modern day is no longer restricted to the purpose that was intended when it was first invented. It is currently used in the protection of culture and art. We are experiencing rapid advancements in the field of text analysis, particularly with NLP algorithms that help in converting speech or texts from ancient languages into numeric form.

Text analysis helps us to understand how words and ideas are connected. Different tools can provide different result but they all point out to one. Yakshagana are performed in local language which

will considered as one of the problems faced by multi state peoples so to reduce it subtitle are must.
This is because the software available in the market concentrates on the major languages used worldwide but is incapable of understanding the nuances of the regional languages, performance, or theatrical expressions. As a result of lack of structured data on these unique artistic languages, the conventional models are unable to comprehend them entirely. However, this problem needs to be addressed immediately and this could be achieved by using a tailor-made technique. With the help of customized data processing techniques and knowledge of Yakshagana linguistic features, a robust model could be developed.

III. METHODOLOGY

1. Data Preprocessing

The first step of our project is to clean and refine the Yakshagana script. Our project helps us work with clear and accurate information. We remove unwanted symbols, formatting issues, and unnecessary text patterns. It ensures better results in the next stages of analysis. We first remove all the unwanted noise from script. This makes the data clean and uniform. When the text is clear, it becomes easier to understand.

The system can then process it faster and better.
All unwanted are deleted and wanted are kept and saved. This helps in creating a clean and uniform dataset. It helps in understanding the dialogues more clearly. In the end, this gives us more reliable results.

2. Feature Extraction

With the scripts cleaned up, the next essential stage is converting the natural human language into something that can be understood by a machine. Because computers don't "see" words like humans, the dialogue has to be converted into an intelligible structure in the form of a map of numbers using a procedure called TF-IDF. What makes this process particularly effective is the fact that not all words have equal importance and the algorithm serves as a kind of filter that emphasizes the most important words in a particular scene. Specifically, TF-IDF focuses on the most relevant words that convey actual information rather than meaningless fillers such as "the," "and," or "is." In doing so, the process allows a machine to pick up linguistic features that matter most in matching live performances with their textual counterparts.

3. Model Training

After cleaning the data removing unwanted data next step is to arrange them in structured format. When data is clean and fixed system can convert and understand it clearly. As when we write exam, we have to recheck it, in the same way we have cross checking. This helps us to connect different sections of the script.

Our main purpose is to dig into each and every word of Yakshagana dialogue. Many times, these meanings are hard to see by normal reading.
So, system is trained to look into these hidden patterns. We use different layers of analysis to do this work.

This engine manages whole process step by step.
It not only sees words but also relation between phrases. Because of this, system can understand full story better. It helps to create a proper digital form of the performance. We also train system with many different samples. Like strong dialogues, emotional parts, and rhythmic verses. This helps system to recognize different styles in performance.

Thus, this step will allow the computer to cope easily with the complex live performance by classifying and matching its features according to the selected criteria. Overall, thanks to these complex algorithms, it becomes possible to transform passive data into a powerful dynamic tool.

4. Model Optimization

In order to increase the effectiveness of our model, we move to improving feature engineering. This means choosing and forming the most significant data elements for providing the system with a clearer perspective. We select the most significant patterns corresponding to successful outcomes and eliminate unnecessary details in order to simplify and accelerate the process of processing information by the system.
At the same time, we control the value of the learning rate.

This coefficient shows how fast the system is adapting to the new environment. The problem arises when we either choose a very low value that causes a lag, or an extremely high one leading the system to miss

significant details in the process. In the last phase, simplicity comes into the picture. There will be no added complications, and nothing beyond requirements would go into the process. Only the relevant information will be concentrated upon, to produce outputs that are simple and understandable. Simplicity helps in the management of the system and eliminates irrelevant factors.

In addition, outputs become more precise with simplicity. The system becomes better and flexible enough to deal with different types of dialogue. It adjusts itself even when there is slight fluctuation in the performance. This, in turn, improves the consistency of the output.

5. Model Deployment
After interface was created and ready to run, we started to watch clearly how the system will work. This helped us to find how much mistakes are made while creating this system. It is user friendly and can be used by anyone. Our next big worry was speed, so we went at our problems right away.

Our own system is getting better every day, and even as our questions get harder, we still have instantaneous replies. We also took great pains to ensure usability, meaning the system is very easy for anyone to use.

IV. SYSTEM ARCHITECTURE

1. User Input Interface:
We have designed a straightforward input interface that allows users to input Yakshagana dialogues without any knowledge of technology.

2. Preprocessing Module:
To prepare Yakshagana text for analysis, this module removes all unnecessary characters from the text.

3. Feature Extraction:
Once the text goes through pre-processing, it is encoded in a manner that brings out its salient features. This feature extraction process is done based on frequency and uniqueness.

4. Classification Model:
The sorting of information is carried out using a combination of advanced analytical frameworks that allow the system to make informed decisions about how the dialogue should be grouped. This step involves using mathematical logic to evaluate various features of the text and determine their most appropriate categories. By cross-referencing different perspectives, the system ensures that each piece of dialogue is classified accurately based on its unique characterstics

5. Prediction Output:
The output from the classification is shown in the interface instantly. The output provides a very fast method of obtaining results since the user does not have to manually perform any computations.

V. MODEL TRAINING

1. Data Preparation:
Yakshagana dialogue samples are collected, cleaned up, and organized into datasets. In this step, inconsistencies in the information are removed to make sure that the data is structured properly. This preparation is essential to give the model an understanding of the nuances of Yakshagana dialogues.

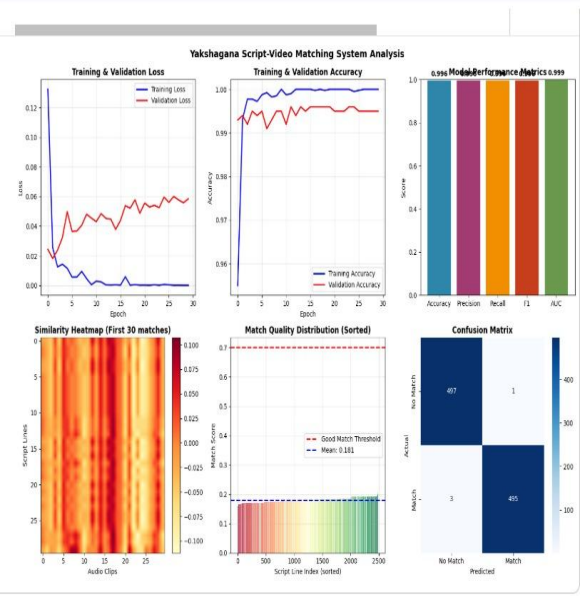
2. Data Training:
The structured information is transformed into a mathematical model using TF-IDF approach. This transformation gives the opportunity to quantify the text data and make it possible for the system to identify the most important features during the training stage.

3. Hyperparameter Tuning:
The model parameters are optimized via Grid Search and Cross Validation:

4. Model Evaluation:
The performance of the model is evaluated based on accuracy, precision, recall, F1-score, etc.

5. Selection of Best Model:
The best performing model is selected and trained again using the entire data set.

6. Model for Production:
The best model and vectorizer are stored for implementation in the application.

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# CELL 7: Real-time Prediction Function
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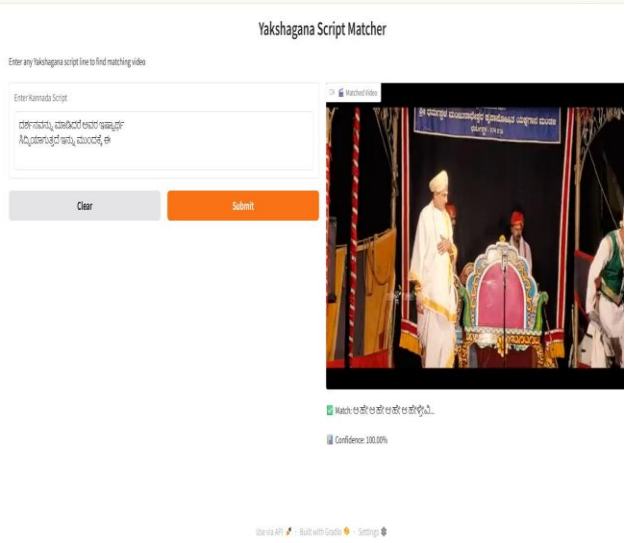
VI. RESULT AND DISCUSSION

AI-based Yakshagana script matching gave promising results in detecting similarities between scripts and finding suitable performances for them. The model could successfully detect the main attributes including characters, narrative pattern, and themes typical of Yakshagana plays. Better performance was observed for clear and properly structured scripts, while the results were somewhat worse if the text included poetic phrases and obscure language.

This research helps us to understand how ai is used to extract text from Yakshagana script.



VII. USER STUDY

The testing process demonstrated a harmonious mix of art and technology, allowing for the reduction of monotonous labour and enabling users to devote more attention to creativity when performing. The process was automated effectively, and the system functioned as a reliable companion during this period.

VIII. CONCLUSION

In this paper, we demonstrate how computational techniques can be used to accurately classify Yakshagana dialogues. This can be done by utilizing text processing, TF-IDF based feature generation, and ensemble methods to integrate classical arts with modern technologies, thus producing an effective tool that achieves its objective. Upon extensive training and testing phases, the model exhibits remarkable efficiency even when encountering novel cases. Accessibility to the model through an easy-to-use interface makes its deployment more convenient and accessible to users without technical expertise. This innovation contributes to the effective management and preservation of Yakshagana dialogues in digital format.

ACKNOWLEDGMENT.

In this research paper, we demonstrate that machine learning is a highly useful tool for classifying dialogues used in Yakshagana performances. The use of text processing, feature extraction based on the TF-IDF measure, and creation of ensembles allows one to apply machine learning algorithms to connect traditional art styles with advanced technologies.
Our developed tool serves its purpose by ensuring efficient classification of the dialogues in real time. After the training and testing phase, the algorithm demonstrates high performance, including its ability to deal with new examples. Ease of access to our tool via user-friendly interface ensures convenience of its use for individuals without advanced programming skills.

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