JSRT JOURNAL
PAGES: 10-21
3/03/24
JOURNAL OF SCIENTIFIC RESEARCH AND TECHNOLOGY(JSRT) VOLUME-2 ISSUE-3 MARCH
Registered under MSME Government of India ISSN: 2583-8660

Classification of Indian Festivals in Accordance with States of India Using Machine Learning

Dr. Shubhangi D.C[1], Shweta[2]

[1]*Professor, Department of Computer Science and Engineering*, VTU, CPGS, Kalaburagi, India.
drshubhangidc.cse@gmail.com

[2]*Student, Department of Computer Science and Engineering*, VTU, CPGS, Kalaburagi, India.
shwetamore1452@gmail.com

ABSTRACT

A religious festival is an annual communal celebration of a special religious event. There could be some very interesting things happening at these festivals. The algorithm sorts the celebrations according to the states. Gives background on the meaning of different holidays and instructions on how to observe their ceremonies and festivities. The system suggests several machine learning approaches for festival classification, including SVM and KNN. This method has a 94% accuracy rate.

Keywords— Canyy's edge detector, Festival, K- Nearest Neighbor, Random Forest Classifier, Support Vector Machine.

I. PREAMBLE

1.1 INTRODUCTION

Celebrations are fundamental to human interaction. All throughout the globe, you may find them arranged in different ways. There are festivals that just a certain town or city may host, and then there are festivals that many different towns in a certain state or country celebrate together. Festivals get their own flavor from this. Indian culture is rich with festivals. The celebrations have immense significance in the life of the Indian populace. Festivals, therefore, are fundamental to Indian culture and society. Religion, the change of the seasons, and the harvest are all central to traditional Indian celebrations. They hail from all across the world. Various regions of the nation follow them in various ways. Many people from remote places go to see them. Consequently, festivals provide tremendous opportunities for both domestic and foreign tourists. The celebration of numerous gods' births and deaths, the commemoration of historical religious luminaries' lives, and many more events are the focus of many festivals. Consequently, it is crucial to conduct geographical examinations of such products. In an effort to boost the country's tourist industry, it also prioritizes the categorization of district celebrations. What follows is a list of topics related to festivals, including their meaning, distribution, categorization, and the reasons people celebrate them. In India, a festival or fair is a joyful and spectacular sequence of activities. It represents the journey from being born to being dead. Many believe that India celebrates more holidays than days in a year. Observance of modest village devotion and propitiation rituals is as enthusiastic as that of more grandiose festivals. Half a million people or more may show up to any event when these kinds of things happen. It is not uncommon for people to celebrate the lives and accomplishments of saints, gurus, heroes, goddesses, prophets, and kings with fairs and festivals. On these occasions, people get together to celebrate. Everyone in India, from Hindus and Muslims to Christians and Sikhs to Buddhists and Jains, observes these days.

MACHINE LEARNING

The idea of machine learning has been around for a while. Arthur Samuel, an early innovator in artificial intelligence and computer games, was a computer scientist at IBM who introduced the word "machine learning" to the world. It was Samuel who came up with the idea for the computer game checkers. The program's ability to learn from experience and generate predictions using algorithms improved as it played more. The study and development of algorithms with the ability to learn from data and provide predictions is the focus of machine learning. Machine learning (ML) has been useful because it can handle large-scale issues far faster than the human brain can. With vast quantities of processing power behind a single or many activities, robots may learn to automate repetitive operations by recognizing patterns and correlations in incoming data.

1.2 OBJECTIVES

- In order to convert festival decor into a digital format.
- Easily accessible digital versions of these things and associated data.
- For purpose of indexing and extracting past festival information.
- Long-term storage of digital items.

II. LITERATURE SURVEY

[1] J. M. Hernández-Mogollón, et.al To find out how cultural events, structural factors, and place branding affect people's overall impressions of destinations, this study will look at both the rational and subjective components of destination image. The conceptual model of the study evaluates the ways in which two cultural events, a religious one a theatrical one, impact perceptions of destinations via a variety of physical and intangible elements, influencing both the cognitive and emotional parts of these images. The activities in question took place during 2013 Easter festivities in Cáceres and the yearly Spanish Festival of Classical Theatre in Mérida. We personally questioned 611 travellers at the event location while they were celebrating. Cultural activities boost tourism and build destination images, according to the data, which also imply that cognitive images are more important than emotional ones in shaping overall perceptions. Both the cognitive and emotive impressions of locations are favorably impacted by structural aspects and place brand, according to the research. There seems to be zero correlation between the event brand and any aspect of the destination's image. Additional research is required to validate these results in other locations and events, Our research just touches on a subset of tourist attractions at these two sites.

[2] B. Djibat, S. Deni, and Z. Saing, The goal of this research was to determine how much the Makayaklo people's traditions value communal support and understanding. As the hallmarks of an accountable citizen, this culture places a premium on formal conduct, perfect human obedience, and moral rectitude. As a culture, the Makayaklo place a premium on solidarity, which encompasses traits like empathy, accountability, simplicity, cooperation, and the ability to aid others. Humbleness, unwavering faith in Islam, climbing the corporate ladder without resorting to corruption, and amassing riches with diligent labor are additional traditional and immutable qualities. This research used a qualitative method using a multi-case study approach to uncover and analyse the significance of Makayaklo tradition in fostering social cohesion and solidarity among North Maluku people. Findings suggested that Makayaklo literature, religion, and folklore might serve as a foundation for character education by passing on the necessary moral principles. The two most important aspects of Makayaklo culture, according to further research, are festivities and taking part in them. As a result, basic education curricula should include local content and culture in order to preserve Makayaklo.

[3] M. R. Abdulla, Invoking religious freedom as an excuse for human rights abuses is one example of how the public perceives the connection between culture and FoRB. On the other hand, many people who fight for human rights differentiate between religion and culture, implying that the former is the root of the issue while the latter is secondary. Having said that, it is very uncommon for religious beliefs and practices to get ingrained in cultural norms and vice versa, leaving little room for clear demarcation between the two. Understanding this connection may lead to more fruitful ways to advance human rights and FoRB.

[4] Organization, Aesthetic Assessment of Paintings, Artworks Tarpit Sahu CSE COER Roorkee, India tarpitsahu@gmail.com 2017

Artists and painters have made significant contributions to the art world over the years. You may discover most of their work on the Internet, which is brimming with their imagination and ingenuity. Artworks, like any other kind of data found online, are often disorganized. Using characteristics taken from a pre-trained CNN—AlexNet—this research proposes a technique to identify paintings using a support vector machine classifier. Paintings are more than just works of art on paper; they have the power to move and delight viewers. Aesthetic assessment seeks to rate and assess artworks based on subjective criteria that machines cannot replicate, such as style, subject matter, emotional involvement, etc. Therefore, while evaluating the artistic merit of a piece of art, we must take human

factors into account. Also presented in this paper is a method for judging a painting's aesthetic value. To do this, we train a regression model using a variety of picture features—like GIST for scene identification, Local Binary Pattern for texture, and Colour Histogram for color—and then compare the results to human assessments. We categorize and evaluate the aesthetic value using a dataset that contains 1225 digitized photos of paintings from 7 different categories. There was a 92.73% success rate in the classification phase and a 64.15% success rate in the assessment phase.

III. SYSTEM REQUIREMENTS

3.1 SYSTEM REQUIREMENT SPECIFICATION

Any project, piece of software may have its characteristics laid out in a Software Requirements Specification (SRS). Prepare an SRS document before you start a project or application; it's basically a guidebook for the project. Here are the functional and non-functional software and hardware prerequisites that we needed to begin our project.

3.2 HARDWARE NECESSITIES

Processor	:	Intel Pentium dual Core
RAM	:	1 GB or above
HDD	:	20 GB or above

3.3 SOFTWARE NECESSITIES

Front End	:	Python
Back End	:	SQLite3
OS	:	Windows XP/7/8/10

IV. SYSTEM ANALYSIS

4.1 EXISTING SYSTEM

Current setup suggests a method for recognizing cultural events that relies on convolutional neural networks to extract religious information.
The CNN was able to correctly categorize the training pictures, which are really smaller picture areas. An image's final classification result is the sum of the classification probabilities of all of its image regions.

4.2 PROPOSED SYSTEM

This method sorts the celebrations according to the states in which they take place. Describes the holidays, their meaning, and how to observe them, including the rituals of Pooja. The system recommends SVM and KNN, two machine learning methods, for festival classification.

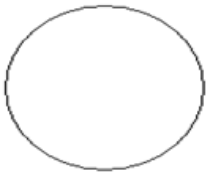
V. SYSTEM DESIGN

5.1 DATA FLOW DIAGRAM

DFD is a graphical depiction of evidence flows inside a system. It shows the locations of storage, the ways in which data enters and exits the system, and more. Data flow diagrams are a great tool for visually representing any process in a company.

Symbolizations used to draw DFD are as tracks:

Table: 1 Symbols used in DFD

Name	Symbol	Meaning
process		Transforms of incoming data flows(s) to outgoing data flows(s).
Data Store		A repository of data that is to be store for use by one or more processes.
Data Flow		Movement of the data in the system.
External Entity		Sources and Destination outside the specified system boundary.

DFD DIAGRAM:

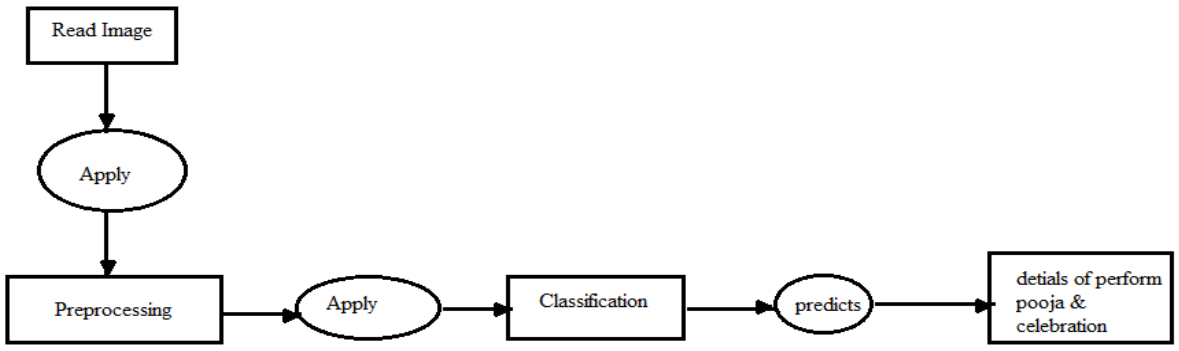


Fig 1: DFD Diagram

5.2 SEQUENCE DIAGRAM

Interaction diagrams that describe the execution of operations are known as UML Sequence Diagrams. They record how things work together in a collaborative setting. By plotting the timestamps of each communication along the vertical axis of the diagram, sequence diagrams make it easy to see the chronological order of a discussion.

Sequence Diagram Notations

Actors – In a UML diagram, an actor stands for a role which cooperates by objects, system. In this case, keep in mind that system we're trying to depict using UML diagram will always have actors that are beyond its scope.

Figure – notation symbol for actor

Lifelines – An individual's lifeline is a named element that shows them on a sequence diagram. In a sequence diagram, a lifeline essentially represents each incident. The most important parts of a sequence diagram are the ones at the very top. The following format is the norm in UML for naming lifelines: – Instance Name : Class Name

Messages – Objects may communicate with one another via the use of messages. On the lifeline, the messages show up in a certain sequence. We use arrows to depict messages. A sequence diagram revolves around lifelines and messages.

The following are some general types of messages:

Synchronous messages – In order to continue the conversation, a synchronous message will wait for a response. The sender patiently awaits the receiver's completion of message processing. Only once the receiver acknowledges receipt of the prior communication (a reply message) can the caller proceed. There are a lot of synchronous calls in object-oriented programming. In order to depict a synchronous communication, we employ a solid arrow head.

Asynchronous Messages – No response from the recipient is required for an asynchronous communication. It makes no difference if the recipient processes the prior message; the conversation continues nevertheless. To depict an asynchronous communication, we utilize a lined arrow head.

Create message – To add a new item to the sequence diagram, we utilize the Create message. In certain cases, creating an object is necessary for a specific message call. A dotted arrow by word "create" labeled on it indicates that it is create Message sign.
As an example, if you want to add a new order to an online store, you'll need to build a new object of the Order type.

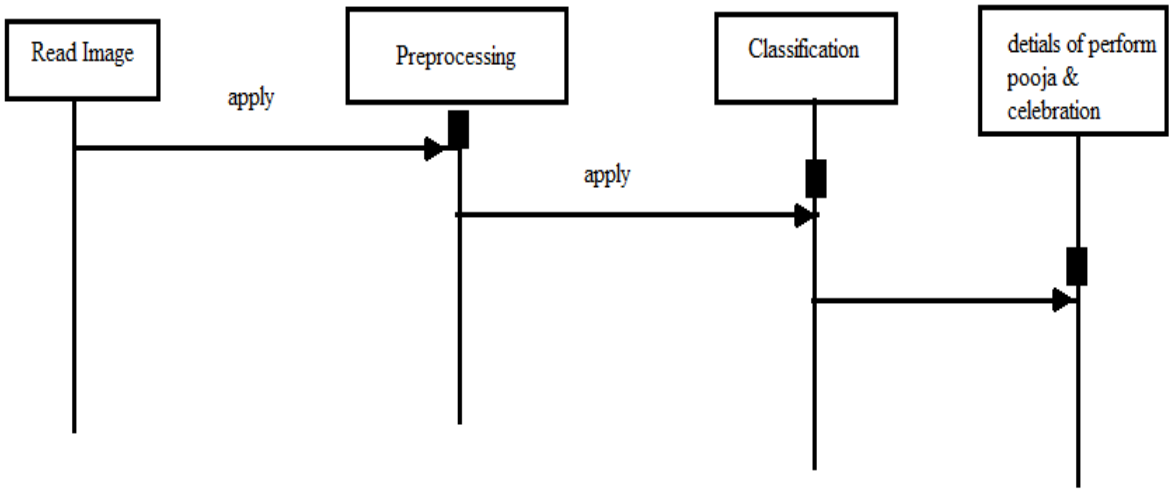


Fig 2: Sequence Diagram

5.3 USE CASE DIAGRAM

When trying to model a system, capturing its dynamic behavior is of utmost importance. What we mean by "dynamic behavior" is how the system acts when it is operational.

Simulating a system's dynamic activity is more crucial than simulating its static behavior alone. Use case diagram is one of five accessible diagrams in UML for modeling dynamic nature. There should be either internal or external variables for creating the interaction, because we must now address the use case diagram's dynamic character."Actors" describes both the internal and external entities involved. Interactions between use cases, actors, and use cases themselves make up use case diagrams. Purpose of the diagram is to characterize application's system or subsystem. An individual use case diagram portrays a specific system function.

We employ several use case diagrams to represent the whole system.

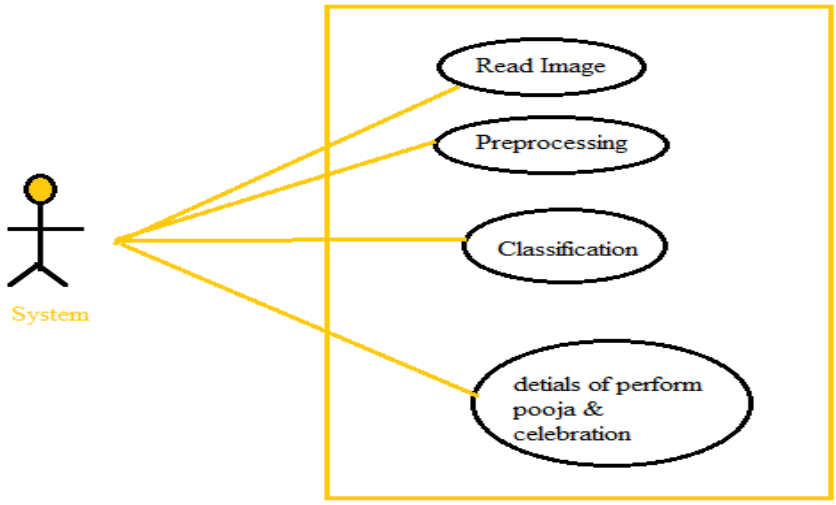


Fig 3:Use-Case Diagram

VI. SYSTEM IMPLEMENTATION

In our project the conversion involves following steps:

1. Reads the dataset
2. Performs preprocessing
3. Applies the classification
4. Displays deatils of rituals and festival celebration

6.1 ARCHITECTURE DIAGRAM

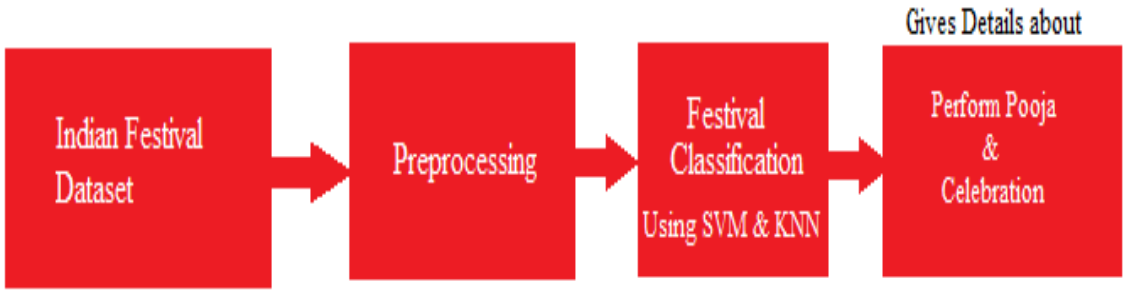


Fig 4: System Architecture

Architecture Description:
In the above architecture, the system accepts the Indian festival dataset. Then it preprocesses it, which removes the null data, then by applying SVM & KNN algorithm it classifies the festivals as per. Also the system provides us additional information such as how to perform rituals and celebrations.

6.2 MODULES & DESCRIPTION

Read Dataset
Preprocessing
Classification

VII. SYSTEM TESTING

7.1 INTRODUCTION

An essential part of software quality assurance, software testing is the last check of the design, code, and specifications. The goal of testing is to identify and fix bugs in a software. The purpose of testing is to verify that the software is functioning as intended by running it through a series of test cases and analyzing the results.

Testing Objectives:

- The goal of testing is to identify and fix bugs in a software.
- If there's a chance of discovering an undetected mistake, then the test case design is excellent.
- A test is considered successful if it finds an error that has not been found yet.
  The aforementioned goals need a radical shift in perspective. Testing may only reveal the presence or absence of software problems; it cannot reveal whether or not flaws are there.

The following are the Testing methodologies:

Unit Testing
Integration Testing
Output Testing
Validation Testing

7.2 FEASIBILITY STUDY

The viability of the project and the system's potential value to the company are both investigated in the first stages. The technical, operational, and financial viability of integrating new modules and fixing existing operating systems are the primary foci of the feasibility assessment. A world with boundless time and resources makes any system possible. Management is the focus of the feasibility study. An information system project's viability and potential other solutions may be better understood via a feasibility study.

The preliminary investigation's feasibility assessment covers the following ground:

- ✓ Technical Feasibility
- ✓ Operational Feasibility
- ✓ Economical Feasibility

VIII. INTERPRETATION OF RESULTS

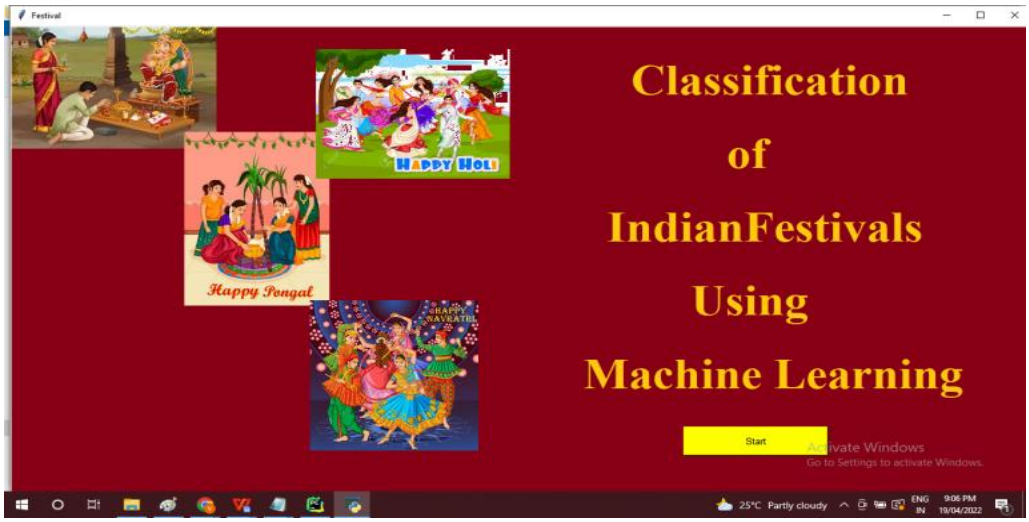


Fig 5 : Main Page

Fig 6: Menu

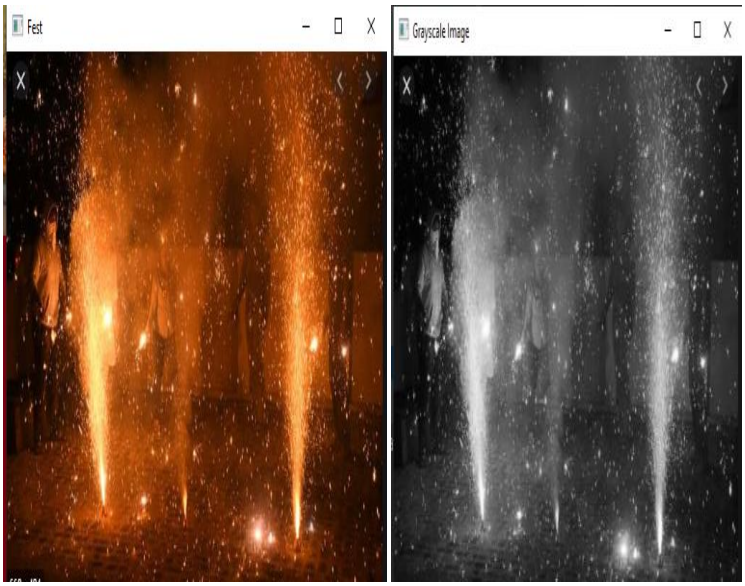


Fig 7 (a) Read Image **(b) Gray scale Image**

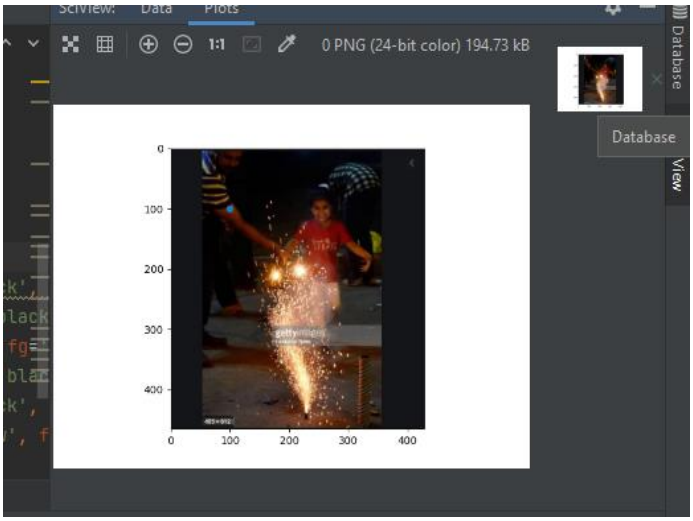


Fig 8: Feature extraction

This module will extract the features of the picures by considering its dimensional measurement in x and y axis

	precision	recall	f1-score	support
CHITHIRAI THIRUVIZHA	1.00	1.00	1.00	20
DIWALI	1.00	1.00	1.00	60
HOLI	1.00	1.00	1.00	100
KARTHIGAI DEEPAM	1.00	1.00	1.00	34
PONGAL	1.00	1.00	1.00	6
RAKSHA BANDHAN	1.00	1.00	1.00	40
accuracy			1.00	260
macro avg	1.00	1.00	1.00	260
weighted avg	1.00	1.00	1.00	260

Fig 9 : Classification of Festivals

122/122 [==============================] - 12s 36ms/step - loss: 0.7201 - accuracy: 0.7419 - val_loss: 0.1147 - val_accuracy: 0.9590
Epoch 2/5
122/122 [==============================] - 3s 25ms/step - loss: 0.1443 - accuracy: 0.9548 - val_loss: 0.0163 - val_accuracy: 0.9969
Epoch 3/5
122/122 [==============================] - 3s 25ms/step - loss: 0.0291 - accuracy: 0.9913 - val_loss: 0.2817 - val_accuracy: 0.9487
Epoch 4/5

```
122/122 [==============================] - 3s 26ms/step - loss: 0.0353 - accuracy: 0.9900 - val_loss: 8.1
218e-05 - val_accuracy: 1.0000
Epoch 5/5
122/122 [==============================] - 3s 26ms/step - loss: 0.0073 - accuracy: 0.9985 - val_loss: 9.2
265e-05 - val_accuracy: 1.0000
```

Fig 10: Epoch Accuracy

IX. CONCLUSION

We conclude that festivals strengthen family and community relationships. It is also critical to celebrate festivals in order to keep indigenous culture alive and flourishing. Many of these celebrations bring joy and happiness into families and communities. During these days, people collect new assets, bolstering the local economy. And in this system, we proposed using machine learning techniques to digitalize festival categorization and obtain all the details,using SVM and KNN.

REFERENCES

1. J. M. Hernández-Mogollón, P. A. Duarte, and J. A. Folgado-Fernández, "The contribution of cultural events to the formation of the cognitive and affective images of a tourist destination," Journal of Destination Marketing & Management, vol. 8, pp. 170–178, 2018, doi: https://doi.org/10.1016/j.jdmm.2017.03.004.
2. B. Djibat, S. Deni, and Z. Saing, "The culture of Makayaklo in North Maluku Society: Teaching the values of building solidarity and social integration," International Journal of Critical Cultural Studies, vol. 17, no. 1, pp. 43–54, 2019, doi: 10.18848/2327-0055/CGP/v17i01/43-54.
3. M. R. Abdulla, "Culture, Religion, and Freedom of Religion or Belief," Review of Faith and International Affairs, vol. 16, no. 4, pp. 102–115, 2018, doi: 10.1080/15570274.2018.1535033.
4. Classification and Aesthetic Evaluation of Paintings and Artworks Tarpit Sahu CSE COER Roorkee, India
5. Dr. Sharanabasappa Gandage, Poornachandra Swami, Rohit, & Shankar Reddy Bengire. (2023). Virtual Paint. Journal of Scientific Research and Technology, 1(2), 25–38.
6. Dr. Rekha J Patil, Indira Mulage, & Nishant Patil. (2023). Smart Agriculture Using IoT and Machine Learning. Journal of Scientific Research and Technology, 1(3), 47–59.
7. Shubam Sharma, & Prof. Vinod Sharma. (2023). Comparison of machine learning techniques in the diagnosis of erythematous squamous disease. Journal of Scientific Research and Technology, 1(4), 1–9.
8. Deeksha Nargotra, & Prof. Vinod Sharma. (2023). Grape Leaf Disease Detection Using Deep Learning. Journal of Scientific Research and Technology, 1(5), 128–139.
9. Hassina Kouser, & Prof. Vibhakar Mansotra. (2023). Deep Learning-Based Segmentation Of Brain Tumor. Journal of Scientific Research and Technology, 1(5), 78–91.
10. Sabina Anjum, & Asra Fatima. (2023). Predictive Analytics For FIFA Player Prices: An ML Approach. Journal of Scientific Research and Technology, 1(6), 204–212.
11. Antariksh Sharma, Prof. Vibhakar Mansotra, & Kuljeet Singh. (2023). Detection of Mirai Botnet Attacks on IoT devices Using Deep Learning. Journal of Scientific Research and Technology, 1(6), 174–187.
12. Dr. Megha Rani Raigonda, & Rajeshwari Hatti. (2024). Haze Removal Of Underwater Images Using Fusion Technique. Journal of Scientific Research and Technology, 2(1), 12–16. https://doi.org/10.61808/jsrt80

13. Dr. Megha Rani Raigonda, & Shweta. (2024). Signature Verification System Using SSIM In Image Processing. Journal of Scientific Research and Technology, 2(1), 5–11. https://doi.org/10.61808/jsrt79
14. Shri Udayshankar B, Veeraj R Singh, Sampras P, & Aryan Dhage. (2023). Fake Job Post Prediction Using Data Mining. Journal of Scientific Research and Technology, 1(2), 39–47.
15. Gaurav Prajapati, Avinash, Lav Kumar, & Smt. Rekha S Patil. (2023). Road Accident Prediction Using Machine Learning. Journal of Scientific Research and Technology, 1(2), 48–59.
16. Dr. Rekha Patil, Vidya Kumar Katrabad, Mahantappa, & Sunil Kumar. (2023). Image Classification Using CNN Model Based on Deep Learning. Journal of Scientific Research and Technology, 1(2), 60–71.
17. Ambresh Bhadrashetty, & Surekha Patil. (2024). Movie Success and Rating Prediction Using Data Mining. Journal of Scientific Research and Technology, 2(1), 1–4. https://doi.org/10.61808/jsrt78
18. Dr. Megha Rani Raigonda, & Shweta. (2024). Signature Verification System Using SSIM In Image Processing. Journal of Scientific Research and Technology, 2(1), 5–11. https://doi.org/10.61808/jsrt79
19. Priyanka Kulkarni, & Dr. Swaroopa Shastri. (2024). Rice Leaf Diseases Detection Using Machine Learning. Journal of Scientific Research and Technology, 2(1), 17–22. https://doi.org/10.61808/jsrt81