



International Journal of Advanced Research in Education and Technology (IJARETY)

Volume 13, Issue 3, May - June 2026

Impact Factor: 9.971



Indian Heritage Information System - A Web-Based Cultural Preservation Platform with AI Integration

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ABSTRACT: India is not just a country of old tales and stone ruins - India's past pulses with music, colors, forgotten scripts, village crafts. Yet screens now glow brighter than temple lamps, pulling youth away from ancestral rhythms. Hidden between books, videos, oral retellings, pieces slip through cracks like sand. Enter a digital space where murals talk, festivals replay, temples rise anew on browsers. Built online, shaped by clicks, it gathers fragments into one living map. Not frozen in time, but flowing - like rivers returning to familiar banks. A fresh way to sort stories - festivals, art, landmarks, farming ways, emblems - lives inside tidy JSON packages, skipping heavy database needs. Talking with the site feels natural, thanks to a smart helper that answers questions on India's heritage right away. Updates slip in smoothly through a back-end space built for quick tweaks to both facts and page parts.

A fresh mix of smart tech and online tools brings culture to life through a digital space shaped by learning machines. This setup invites people to explore traditions while keeping India's roots alive down the road. Built on code that adapts, it opens doors without flashing promises or loud claims. Each piece fits quietly, holding meaning steady across time. Python guides the core, while Flask handles requests. Instead of rigid structures, it leans on JSON files that adapt as needed. Talking back to questions about culture? A smart bot steps in, trained to respond. When pictures arrive, a vision tool built on ResNet-18 picks out landmarks without hesitation. Three layers hold everything up, separating concerns quietly behind the scenes. Patterns borrowed from MVC keep things tidy, even when growth comes knocking. Outcomes show the AI features work well alongside quick-loading pages, tight backend protections, and precise labeling of historic sites. When tech tools meet cultural records, something useful emerges - engagement grows without losing accuracy or access.

KEYWORDS: Cultural Heritage, Web Application, Flask Framework, Artificial Intelligence, Chatbot, Image Classification, ResNet-18, JSON Database.

I. INTRODUCTION

India is a land of diverse cultures shaped by variations in geography, climate, and interaction with other civilizations. These influences have created different traditions and cultural practices across regions. Despite these differences, a common cultural foundation unites the country. India's cultural richness also comes from its ability to absorb and blend influences from various invaders and communities, which is reflected in its music, dance, art, sculpture, and architecture [1]. the archaeological survey of india is responsible for archaeological research and conservation and preservation of cultural historical monuments [2]. Additionally, the impact of historical colonization and uneven post-independence conservation policies have further marginalized vernacular and community-specific heritage forms [3]. In rural areas, where traditional practices often survive, the younger generation's migration to cities and the shift toward digital media have created a growing disconnect between people and their inherited cultural environments [4].

These days, screens fill most hours of the day - phones humming, feeds scrolling, videos looping. Because answers sit just a tap away, older ways of knowing often get pushed aside. Instead of local customs, many youth now follow styles born far beyond their borders. Familiarity grows fast with worldwide hits while home grown stories fade behind quiet walls. What once stood central in community life now waits in shadows, barely noticed.

Most details on Indian culture lie split between countless sites and books. One spot might list festivals while another skips straight to food - no clear path connects them. Because of this patchwork setup, people struggle to grasp how traditions fit together. Over time, kids grow up less familiar with their own background.

One answer came in the form of a digital tool focused on India's rich past, built like a living map online. This space gathers pieces of tradition - festivals, farmlands, art forms, landmarks, state histories, and emblems - not just listing them but weaving them into view. Instead of static pages, it uses photos, short stories, and clickable layers to pull

curiosity along. A person moves through it not by reading alone, but by touching moments of history one after another. Learning happens quietly, simply, while exploring.

A smart helper built into the system replies to questions about culture using artificial intelligence. Starting from user curiosity, it guides them through stories behind traditions. Another piece spots old landmarks when someone shares a photo. This recognition feature turns any image into a starting point for discovery. Interaction grows naturally when tech meets history. Exploring India's past feels less like study, more like wandering through time with help nearby. Digital space becomes a quiet companion in learning.

II. RELATED WORK

The **Indian Heritage Information System** is designed as a web-based application developed using modern web technologies and artificial intelligence techniques. The system is implemented using **Python and the Flask framework** [5] for backend development, while **HTML, CSS, JavaScript, and Bootstrap** [6] are used for the frontend interface. Instead of using a traditional database, the system stores cultural information in **structured JSON files** [7], allowing modular data management and easy updates. Each cultural category such as festivals, monuments, arts, and states is stored as a separate JSON module, which is dynamically loaded through Flask templates.

The system integrates two major AI-based components. The first is an **AI-powered chatbot** [8] that processes user queries related to Indian culture and provides responses in natural language. The second component is an **image classification module** based on the **ResNet-18 deep learning model** [9], which allows users to upload images of monuments and receive predictions about the monument's identity along with relevant information.

Additionally, the system includes an **administrative interface** that enables authorized users to update homepage content, manage cultural data, and upload images without requiring advanced technical knowledge. This modular architecture improves maintainability, scalability, and system performance.

III. METHODOLOGY

To identify historical sites in India the image classification model is trained using the Indian Monuments dataset from Kaggle[10]. The dataset includes labeled pictures of well-known monuments gathered from various sources. Pictures are arranged into folders each of which stands for a distinct monument class. Important landmarks like the Taj Mahal Mysore Palace Hawa Mahal Charminar Qutub Minar Gateway of India Konark Sun Temple Sanchi Stupa Red Fort and Golden Temple are included in the dataset. The model can learn a variety of visual characteristics by viewing monuments from various perspectives and lighting conditions. Prior to training images undergo normalization tensor conversion and resizing to 224×224 pixels. These procedures get the photos ready for the classification process using the ResNet-18 convolutional neural network. Which ones trained doesn't need to train again.

An **AI-powered chatbot** was integrated into the Indian Heritage Information System to provide interactive access to cultural information. The chatbot answers user queries related to Indian heritage such as monuments, festivals, traditions, and history.

The chatbot is implemented using the **OpenAI API** and integrated with the system through the **Flask backend**. When a user submits a question through the chat interface, the request is sent to the OpenAI API, which generates a natural language response. The response is then displayed instantly in the chat window. This feature enables users to explore cultural topics through conversation, making the platform more **interactive and user-friendly**.

The steps are as follows expressed in brief sentences for image classification:

1. Initially a labeled dataset of photos of Indian monuments is gathered from Kaggle.
2. The images undergo preprocessing which includes normalization tensor conversion and resizing to 224×224 pixels.
3. Using the PyTorch deep learning framework the pretrained ResNet-18 model is loaded.
4. The number of monument classes is adjusted in the models last fully connected layer.
5. The training dataset and a suitable optimizer and loss function are then used to train the model.
6. The accuracy of the model is assessed using the test dataset following training.
7. Finally the trained model predicts the monument when a user uploads an image.

IV. RESULTS AND DISCUSSION

1. **ResNet-18** is a deep convolutional neural network with **18 layers** that uses **residual (skip) connections** to improve learning in deep models. In this project, a **pretrained ResNet-18 model** is used to classify images of historical monuments.

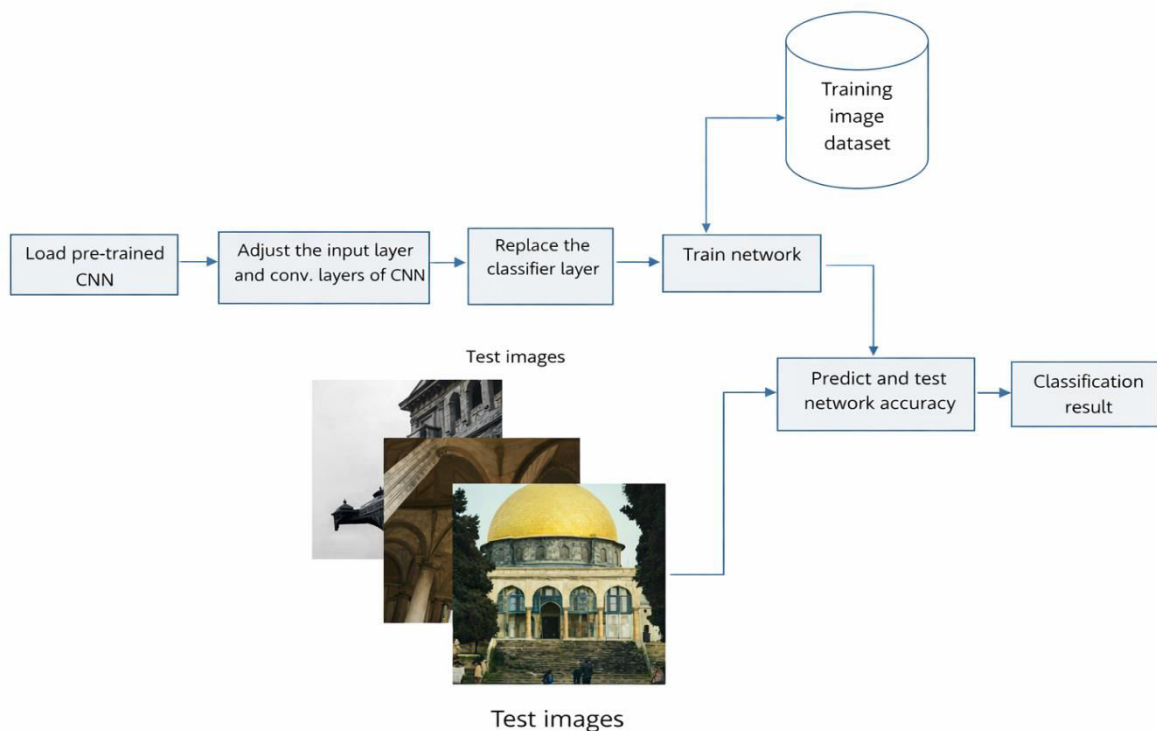


Fig 1 : The proposed ResNet-18 Model

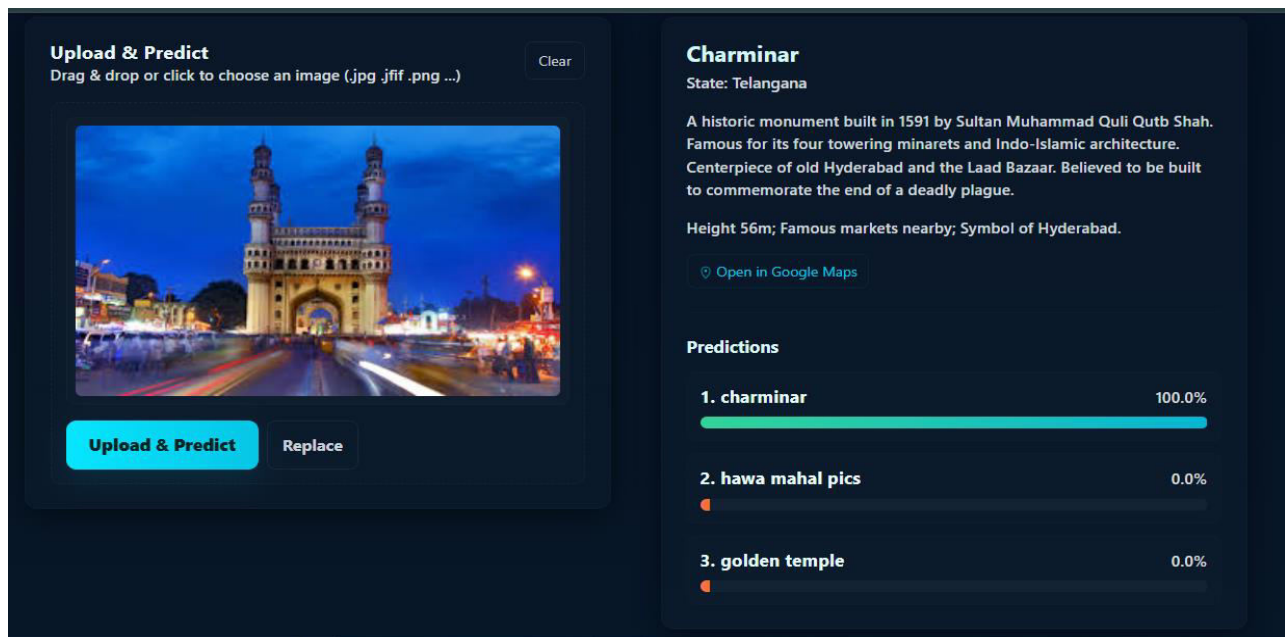


Fig2 : Output/Prediction and Description of the monument uploaded

V. CONCLUSION

Through a digital platform the Indian Heritage Information System shows how web technologies and artificial intelligence can be used to protect and promote India's cultural heritage. Traditional static heritage websites are transformed by the system into an interactive user-friendly online application that lets users explore cultural details like national symbols, festivals, artwork, monuments, and customs. The platform is straightforward, scalable, and easy to maintain because Flask is used for backend development and JSON is used for lightweight data management. The system incorporates an AI-based chatbot that responds to inquiries about Indian ancestry and a ResNet-18 image classification model that recognizes historical sites from uploaded photos in order to improve user interaction. The system successfully satisfies the project's functional and non-functional requirements and operates dependably in a variety of settings according to test results. All things considered, the Indian Heritage Information System offers a successful digital solution for cultural preservation while developing an interesting learning environment for scholars, students, and the general public.

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International Journal of Advanced Research in Education and Technology

ISSN: 2394-2975

Impact Factor: 9.971