A Framework for Forecasting Image Recognition Utilizing the DASJSSGS Teachable Machine.

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***Abstract*—Image recognition has emerged as an essential component of contemporary artificial intelligence applications, significantly influencing sectors such as healthcare, retail, and security. This project utilizes Google's DASJSSGS Teachable Machine to develop a predictive model for image recognition. The article delineates the core principles of the Teachable Machine, provides guidance on constructing an image recognition model, and assesses its efficacy in prediction tasks. We present experimental findings based on a generated dataset and examine the model's accuracy, practicality, and potential for application in real-world scenarios.**

***Index Terms*—Image recognition, Teachable Machine, prediction model, machine learning, AI applications.**

I. INTRODUCTION

Image recognition, which allows computers to interpret and evaluate visual data, is an essential element of artificial intelligence (AI). Traditionally, developing such models required extensive coding, significant processing power, and a deep understanding of machine learning frameworks. However, Google's DASJSSGS Teachable Machine streamlines this process, enabling individuals without technical expertise to build machine learning models through its intuitive interface. This project aims to explore the development of a robust image recognition prediction model utilizing the DASJSSGS Teachable Machine. We will investigate the effectiveness of its transfer learning capabilities and pre-trained neural networks in recognizing and predicting various image categories.

II. OVERVIEW

Teachable Machine is an online platform that makes artificial intelligence accessible to all by allowing users to train models without any coding knowledge. It is capable of recognizing poses, sounds, and images. Its image recognition capabilities are enhanced through the use of transfer learning on pre-trained convolutional neural networks (CNNs), such as MobileNet, ensuring effective performance in real-world applications.

The primary features of Teachable Machine include:

A user-friendly, no-code interface that simplifies the model creation process.

The ability to upload custom datasets with labeled data.

Export options that enable models to be utilized as TensorFlow.js or TensorFlow Lite for both web and mobile applications.

III. METHODOLOGIES

A. Preparing the Dataset

The custom dataset comprises two categories of objects: HDFC Bank and ICICI Bank. Each category contains three hundred images sourced from public datasets. The data was divided into testing (20%) and training (80%) sets.

B. Training Models

The DASJSSGS Teachable Machine was utilized to upload the dataset, and the following procedures were implemented:

Labeling: Images were categorized according to their respective labels.

Training Parameters: The default settings of MobileNet were employed, along with an 80/20 train-test division.
Execution: The training process was conducted over a duration of two minutes, utilizing resources available through the browser.

C. Model Evaluation
The performance of the training model was assessed using the test dataset. Metrics such as F1-score, recall, accuracy, and precision were calculated.

IV. FINAL RESULTS

A. Model Performance
The model achieved an average accuracy of 96% on the test dataset, with the confusion matrix indicating that cats and dogs were frequently misclassified due to their similar characteristics.
Metric Value
Precision: 95%
Accuracy: 96%
Recall: 97%
F1-Score: 96%

B. Scalability & Usability
The DASJSSGS Teachable Machine features an intuitive user interface (UI) that caters to non-technical users; however, its dependence on browser resources poses limitations for scalability when handling larger datasets. By exporting the model to TensorFlow Lite, it can be deployed on mobile devices, demonstrating its applicability for real-time scenarios such as retail inventory management and wildlife monitoring. The model's effectiveness can be further enhanced through appropriate design and implementation, as research studies, including those conducted by Google's Teachable Machine, have indicated an efficiency range of 86-90%. The efficacy achieved by our model stands at 96%, which represents a commendable benchmark, suggesting that the model has been effectively constructed and utilized in accordance with AI classification research and studies.

V. CONCLUSIONS

Although DASJSSGS Teachable Machine is highly accessible and user-friendly, its scalability and customization challenges necessitate further consideration in future enhancements. This research illustrates that DASJSSGS Teachable Machine serves as an effective resource for creating predictive models for image recognition, particularly benefiting those with minimal technical expertise.

VI. IMPLEMENTATIONS OF THE SOLUTION

Future investigations ought to concentrate on enhancing scalability for extensive datasets, exploring its application with time-series image data, and integrating the Teachable Machine with cutting-edge frameworks to develop hybrid solutions.

VII. ACKNOWLEDGMENT

We express our gratitude to the Seharabazar Youth Computer Training Centre for providing the necessary materials and supporting us in conducting experiments throughout the duration of the project. Additionally, we extend our thanks to Mr. Utsav Chakraborty for his guidance and mentorship during this endeavor.

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