A Framework for Predicting Image Recognition with the MTLSA Teachable Machine

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***Abstract*— Image identification is a key component of today's artificial intelligence applications, which significantly affect sectors including healthcare, retail, and security. This project uses Google's ARSAK Teachable Machine to create a predictive model for image recognition. The article describes the core concepts of the Teachable Machine, provides guidance on creating a photo recognition model, and assesses the model's performance in prediction tasks. We show experimental results based on a generated dataset and evaluate the model's accuracy, practicality, and potential for use in real-world scenarios.**

***Index Terms*— AI applications, machine learning, prediction models, teachable machines, and image recognition**

I. INTRODUCTION

An essential part of artificial intelligence (AI) is image recognition, which enables computers to evaluate and analyze visual data. It used to take a lot of coding, processing power, and in-depth understanding of machine learning frameworks to create such models.
However, Google's MTLSA Teachable Machine streamlines this process and enables anyone without technical expertise to build machine learning models because of its intuitive interface. This paper explores the development of a trustworthy image recognition prediction model using the MTLSA Teachable Machine. We will investigate how successfully its transfer learning skills and pre-trained neural networks recognize and predict various image categories.

II. OVERVIEW

Image recognition, which enables computers to understand and assess visual input, is a crucial component of artificial intelligence (AI). In the past, these models required a lot of coding, processing capacity, and machine learning framework expertise. However, Google's NCDR Teachable Machine simplifies this process and makes it possible for non-experts to create machine learning models because of its user-friendly interface. Investigating the creation of an effective image recognition prediction model with MTLSA Teachable Machine is the aim of this project. Using transfer learning and its pre-trained neural network skills, we assess its capacity to recognize and predict image classes. Teachable Machine is an internet tool that democratizes artificial intelligence by enabling anyone to train models without understanding any code.

III. METHODOLOGIES

3.1. Preparing the Dataset
HDFC Bank and ICICI Bank are the two object categories included in the custom dataset. Three hundred photos from public datasets were included in each category. Data sets were separated for training (80%) and testing (20%).
3.2. Models for Training The dataset was uploaded using the MTLSA Teachable Machine, and the subsequent actions were performed:
Labeling: Pictures were arranged according to their labels.
Training Requirements: We employed an 80/20 train-test split using MobileNet's default settings.
Directions: Using browser-based resources, the two-minute training session was finished.
3.3. Assessment of Model
The training model was evaluated using the test dataset. Calculations were made for metrics such as F1-score, recall, accuracy, and precision

IV. FINAL RESULTS

The Model's Performance The model's average accuracy on the test set was 96%, although the confusion matrix revealed that cats and dogs were most commonly misclassified due to their apparent

similarities. 95% Precision of Metric Values 96% accuracy 97% recall The F1 score was 96 percent. Scalability and Usability NCDR Teachable Machine's user-friendly interface (UI) makes it suitable for non-technical users, even though its reliance on browser resources limits its scalability for larger datasets. Exporting the model to Tensor Flow Lite allowed for deployment on mobile devices, showcasing its potential for real-time applications like store inventory management and wildlife monitoring.

V. CONCLUSIONS

The Performance of the Model Although the confusion matrix showed that cats and dogs were most frequently misclassified because of their apparent similarities, the model's average accuracy on the test set was 96%. 95% Metric Value Precision 96% accuracy Recall of 97% 96 percent was the F1 score. Usability and Scalability Although MTLSA Teachable Machine's dependency on browser resources restricts its scalability for larger datasets, its user-friendly interface (UI) makes it appropriate for non-technical users. By exporting the model to Tensor Flow Lite, it was possible to deploy it on mobile devices, demonstrating its potential for real-time applications such as wildlife monitoring and retail inventory management.

VI. IMPLEMENTATIONS OF THE SOLUTION

Future research should focus on improving the technologies

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