SMYK Teachable Machine Model for Image Recognition Prediction

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***Abstract*— Given its influence on sectors including healthcare, retail, and security, image recognition has emerged as a critical component of contemporary AI applications. In this research, a prediction model for image identification is developed using Google's SMYK Teachable Machine. The article describes the basic ideas behind the Teachable Machine, shows how to build a model for picture recognition, and assesses how well it performs in prediction challenges. We examine the model's accuracy, practicality, and potential for real-world applications while presenting experimental findings on a produced dataset.**

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

I. INTRODUCTION

An essential part of artificial intelligence (AI) is image recognition, which gives computers the ability to comprehend and evaluate visual input. Such models used to need a great deal of coding, processing power, and knowledge of machine learning frameworks. But thanks to its intuitive interface, Google's SMYK Teachable Machine streamlines this procedure and enables non-experts to build machine learning models. The goal of this study is to investigate the development of an efficient image recognition prediction model using SMYK Teachable Machine. We evaluate its ability to identify and forecast image classes using transfer learning and its pre-trained neural network capabilities.

II. OVERVIEW

By allowing anyone to train models without knowing any code, Teachable Machine is an online application that democratizes artificial intelligence. It is able to recognize images, sounds, and poses. Its image recognition module works effectively for real-world applications because it applies transfer learning to convolutional neural networks (CNNs) that have already been trained, like MobileNet.

The following are Teachable Machine's salient features:

Model construction is made easier using a no-code interface.

Labeled data can be uploaded to custom datasets.

Exportability: Models can be used in web and mobile applications like TensorFlow.js or TensorFlow Lite.

III. METHODOLOGIES

3.1. Preparing the Dataset

HDFC Bank and ICICI Bank are the two object categories that are part of 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 SMYK Teachable Machine, and the subsequent actions were performed:

Labeling: Pictures were categorized according to their labels.

Training Requirements: We employed an 80/20 train-test split using Mobile Net's default settings.
Directions: Using browser-based resources, the two-minute training session was finished.

3.3. Assessment of Model

The test dataset was used to assess the training model. Metrics including F1-score, recall, accuracy, and precision were calculated**.**

IV. FINAL RESULTS

Performance of the Model

The confusion matrix showed that cats and dogs were most frequently misclassified because of their apparent similarities, while the model's average accuracy on the test set was 96%.

95% Metric Value Precision 96% accuracy, 97% recall

F1-Score: 96 percent

Usability and Scalability

Though its dependency on browser resources restricts its scalability for larger datasets, SMYK Teachable Machine's user-friendly interface (UI) makes it appropriate for non-technical users. Deployment on mobile devices was made possible by exporting the model to TensorFlow Lite, demonstrating its potential for real-time applications such as wildlife monitoring and retail inventory management. With appropriate design and implementation, the model's effectiveness should be enhanced; studies including Google's Teachable Machine have indicated that its effectiveness has been examined in the range of 86–90%. 96% is the efficacy that our model yielded, which is a great contrast. This suggests that the model is appropriately built and used in accordance with research and studies on AI categorization.

V. CONCLUSIONS

Future advances must address the scalability and customisation challenges with SMYK Teachable Machine, despite its excellent accessibility and simplicity. This study shows that SMYK Teachable Machine is an effective method for creating picture identification prediction models, particularly for people with little technical expertise.

VI. IMPLEMENTATIONS OF THE SOLUTION

Future studies ought to concentrate on enhancing scalability for sizable datasets, investigating its potential applications with time-series image data, and fusing the Teachable Machine with cutting-edge frameworks to produce hybrid solutions.

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