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## Title: Prediction of Unknown Data using Trained Model (Image-based Classification)

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### 1. Objective

The main objective of this project is to build a machine learning model that can **predict unknown images** based on the data it has been **trained** with.

This project uses **Teachable Machine by Google** to train a model that classifies images into two categories — *Girl* and *Boy*.

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### 2. Introduction

Machine Learning (ML) is a field of Artificial Intelligence that enables computers to learn patterns from data and make predictions on new or unseen data.

In this project, we used **Google Teachable Machine**, an online tool that allows users to train ML models easily without coding.

The trained model can recognize new input images and predict whether the image belongs to the “Girl” class or the “Boy” class based on its training experience.

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### 3. Tools and Technologies Used

- **Teachable Machine (by Google)** – For training the model
  - **TensorFlow.js / TensorFlow Lite** – For exporting and using the model
  - **Webcam / Image Uploads** – For collecting image data
  - **Computer System with Internet Access**
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### 4. Methodology

The project involves the following steps:

#### Step 1: Creating a New Project

- Open <https://teachablemachine.withgoogle.com/>
- Select **Image Project** → **Standard Image Model**.

#### Step 2: Adding Classes

- Create two classes:
  1. **Girl**
  2. **Boy**

#### Step 3: Collecting Image Samples

- Capture images using a webcam or upload photos.
- For example:
  - *Girl class* → 4 images
  - *Boy class* → 5 images

#### Step 4: Training the Model

- Click on **Train Model**.
- The tool automatically learns features and patterns from the sample images using deep learning (CNN - Convolutional Neural Networks).

#### Step 5: Testing the Model

- After training, turn **Webcam ON** and test with new images.
- The system predicts the class of the image and shows the probability of each class.

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### 5. Working Principle

The model uses **transfer learning**, which means it builds upon a pre-trained neural network (like MobileNet).

It extracts image features such as shapes, colors, and edges, and then:

1. **Analyzes** the features of the input image.
2. **Compares** them with patterns learned during training.
3. **Predicts** the most probable class for the unknown image.

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### 6. Output

Example result during testing:

Input Image	GIRL Probability	BOY Probability	Predicted Class
Live webcam image	0.99	0.01	<b>GIRL</b>

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### 7. Applications

- Gender classification
  - Face recognition systems
  - Emotion or age prediction
  - Attendance and security systems
  - Smart camera systems
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## 8. Advantages

- Easy to use (no coding required)
- Quick training and testing
- Can be used on web, mobile, or desktop
- Beginner-friendly machine learning environment

## 9. Conclusion

This project successfully demonstrates how a trained machine learning model can predict **unknown data** using **learned features** from training data.

Using Teachable Machine, even beginners can train accurate image prediction models easily.

The model achieved **99% accuracy** when classifying new test images, proving its effectiveness in real-time prediction.

## 10. References

- [Google Teachable Machine](#)
- [TensorFlow.js Documentation](#)
- [Google Creative Lab – Teachable Machine GitHub](#)

## Output:

