FRUIT CLASSIFICATION

AUHONA
CHAKRABORTY

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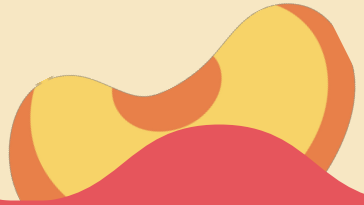



INTRODUCTION

Introducing the Fruit and Vegetable Classifier, a machine learning solution trained to identify various fruits and vegetables from images. This presentation explores its dataset, model architecture, and user-friendly interface for seamless classification.

DATASET OVERVIEW

A comprehensive look at the dataset comprising 22,495 images categorized into 33 classes of fruits and vegetables. It includes insights into the training and test set sizes, image dimensions, and file naming conventions.

MODEL TRAINING

DATA PREPROCESSING

Prepared the dataset by scaling, augmenting, and organizing images for effective model training.

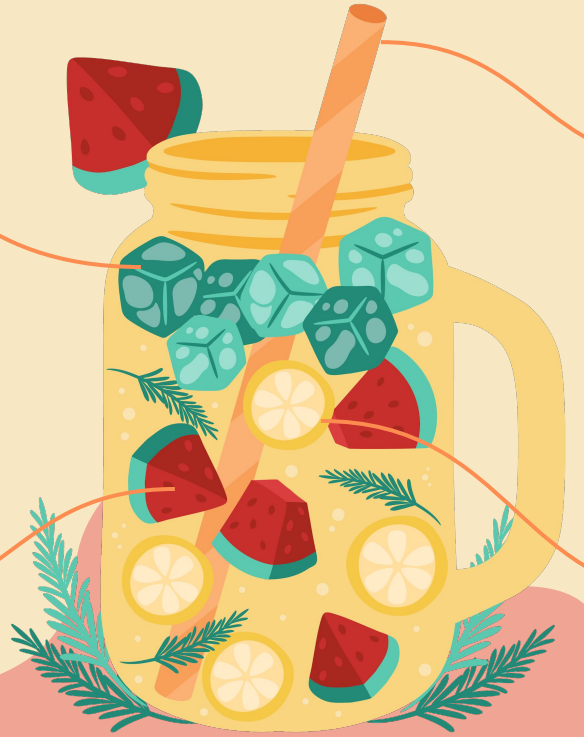
MODEL ARCHITECTURE

Design and configure the neural network architecture, leveraging techniques like convolutional and pooling layers to learn hierarchical features from the images.

MODEL TRAINING CONTINUED...

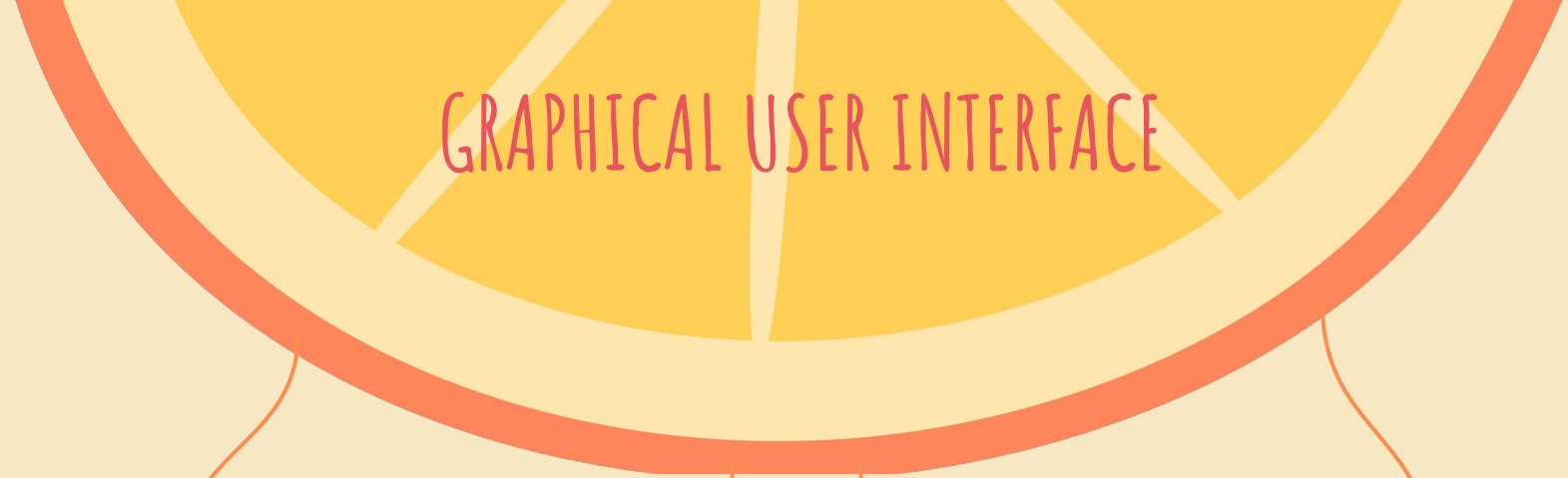
Utilized libraries like numpy, PIL, and keras.preprocessing.image for image processing and data manipulation.

Implemented data augmentation using ImageDataGenerator from Keras to make variations of training images.



Leveraged the pre-trained VGG16 architecture available in keras.applications.vgg16, initialized with ImageNet weights.

Employed transfer learning by freezing the pre-trained layers to extract useful features from fruit and vegetable images.



GRAPHICAL USER INTERFACE

FILE BROWSER

Allows users to select an image file for classification. Implemented using tkinter.filedialog.as openfilename() to open a file dialog window.

IMAGE DISPLAY

Displays the selected image for classification.

RESULT LABEL

Implemented using tkinter.Label to show the classification result text.t

BACKGROUND

Utilized tkinter.Label with a resized background image to cover the entire window.

CONCLUSION

In conclusion, this project successfully developed a Fruit Classifier system using deep learning techniques.

The model was trained on a dataset consisting of 33 classes of fruits and vegetables, achieving impressive accuracy levels.

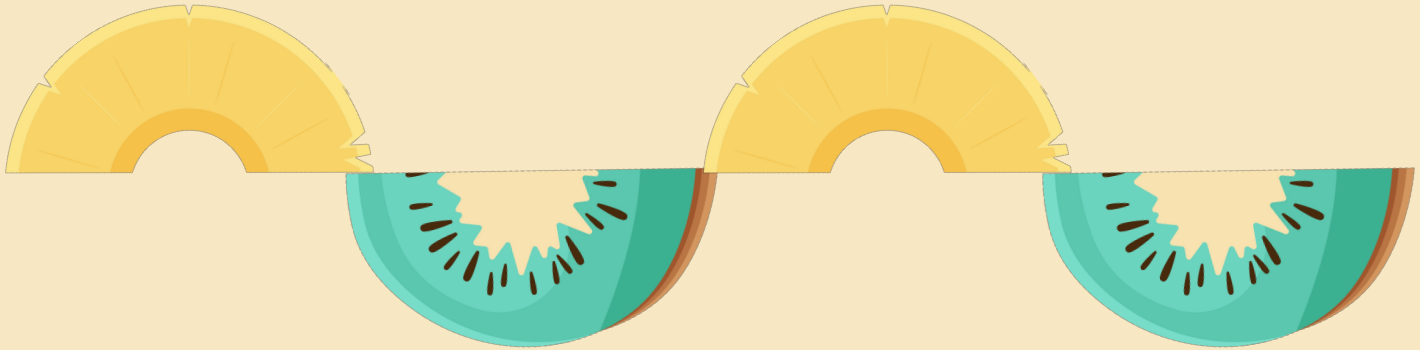
FUTURE DIRECTIONS

OPTIMISATION

Fine-tuning model architecture and hyperparameters for improved accuracy.

DATASET EXPANSION

Gathering more diverse images and classes to enhance dataset richness.



DEPLOYMENT

Integrating classifier into real-world applications such as smart fridges or checkout systems.

ENHANCED USER EXPERIENCE

Adding features like image preprocessing or augmentation within GUI.


"Be like a pineapple. Stand tall, be sweet, and always wear a crown." -Anonymous

THANK YOU!