FRUIT IDENTIFICATION

Using Generative AI

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AGENDA

-> Problem Statement

-> Description of dataset

-> Solution and Proposition

-> Key features and modelling approach

-> Results and Evaluation

FRUIT IDENTIFICATION

-> Using generative AI for fruit identification can be an interesting approach.

-> One way to do this is by training a generative adversarial network (GAN) or a similar model on a dataset of images containing various fruits.

-> Deep learning-based classification models may also be effective for this task.

-> Generative AI can significantly enhance fruit identification by providing a rich and diverse dataset, improving model performance and adaptability.

DATASET

For identifying the fruits using the generative AI, the dataset can be used.

The dataset contains the images of different types of fruits such as apple, banana, cherry, chickoo, grapes, kiwi, mango, orange and strawberry.

Along with their angles, lighting conditions, and backgrounds.

SOLUTION & PROPOSITION

->Collect Data: Gather a diverse dataset of fruit images, representing different types of fruits, angles, lighting conditions, and backgrounds.

->Preprocess: Standardize the images by resizing, cropping, and normalizing them.

->Train GAN Model: Train a GAN (Generative Adversarial Network) or other generative model on the collected fruit images.

->Generate Augmented Data: Use the trained GAN to generate new fruit images similar to those in the dataset.

->Quality of Generated Data: Ensure the GAN generates high-quality and realistic fruit images to avoid introducing noise into the dataset.

KEY FEATURES

->Data Augmentation:Use a generative model like GAN to augment the dataset by creating new, realistic fruit images.

->Synthetic Data Generation: Generative models can create synthetic fruit images to balance class distributions, which can help in scenarios where certain fruit types are underrepresented in the dataset.

->Data Privacy: By generating synthetic fruit images, you can avoid potential privacy concerns associated with using real-world data.

->Scalability:The process can scale as more fruit types and variations are added to the dataset, supporting the identification of a broader range of fruits.

MODELLING APPROACH

->Generate Augmented Data: Use the trained generative model to produce new fruit images. Aim for a variety of different fruit types and variations in angles, lighting, and backgrounds.

->Combine Data: Mix the generated fruit images with the original dataset to create an augmented dataset for training

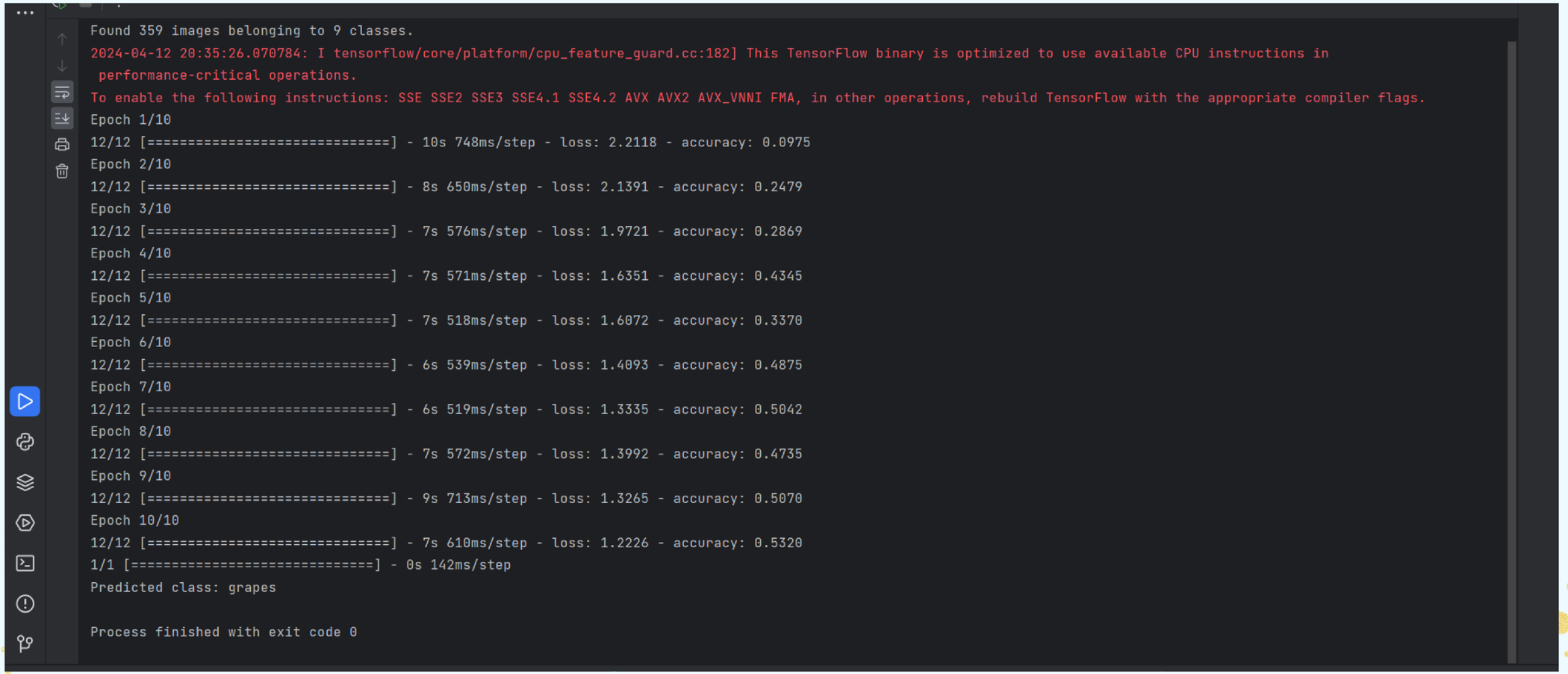
->Choose a Model: Select a classification model suitable for image recognition tasks, such as a convolutional neural network (CNN). Consider using pre-trained models such as ResNet, Inception, or EfficientNet for transfer learning.

->Train the Model: Train the classification model on the augmented dataset (original and generated images). Use appropriate loss functions and optimization techniques.

->Validate the Model: Validate the model on a separate validation set to monitor its performance and avoid overfitting.

RESULTS AND EVALUATION

For Fruit Identification using Generative AI



THANK YOU