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import pandas as pd
import numpy as np
import tensorflow as tf
from tensorflow.keras.models import Model
from tensorflow.keras.layers import Input, Conv2D, MaxPooling2D, Flatten, Dense, Dropout
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder
from tensorflow.keras.utils import to_categorical
from PIL import Image
import os
# Function to load and preprocess data
def load_data(df, img_folder, img_size=(128, 128)):
    Loads images and labels from a DataFrame and image folder.
    Args:
        df (pd.DataFrame): DataFrame containing image paths and labels.
        img_folder (str): Path to the folder containing images.
        img_size (tuple): Desired size for resizing images.
    Returns:
    tuple: A tuple of numpy arrays (X, y_labels, y_calories).
"""
    images = []
    labels = []
    calories = []
    # This loop is a placeholder. You would need to adapt it to your specific dataset structure.
    # It assumes a column 'image_path' and 'Food_Item' and 'Calories (kcal)'
    for index, row in df.iterrows():
       img_path = os.path.join(img_folder, row['image_path'])
        # Check if the image file exists
        if not os.path.exists(img path):
            print(f"Warning: Image not found at {img_path}. Skipping.")
        try:
            img = Image.open(img_path).convert('RGB')
            img = img.resize(img_size)
            images.append(np.array(img))
            labels.append(row['Food_Item'])
            calories.append(row['Calories (kcal)'])
        except Exception as e:
            print(f"Error loading image {img_path}: {e}")
    images = np.array(images)
    labels = np.array(labels)
    calories = np.array(calories, dtype='float32')
    # Normalize pixel values
    images = images / 255.0
    return images, labels, calories
# 1. Load the dataset (This is a dummy example since we don't have the image files)
    df = pd.read_csv('/content/daily_food_nutrition_dataset.csv')
    # For this example, let's assume we have a column with dummy image paths
    # In a real scenario, you would have a dataset that maps an image file to its nutritional data
    df['image_path'] = df['Food_Item'].astype(str) + '.jpg' # Dummy image paths
except FileNotFoundError:
    print("Error: The file 'daily_food_nutrition_dataset.csv' was not found.")
    exit()
# 2. Preprocess the data
# Since we don't have the images, we will create some dummy data
print("Creating dummy data for demonstration...")
num samples = len(df)
img_size = (128, 128)
num_classes = df['Food_Item'].nunique()
X = np.random.rand(num_samples, img_size[0], img_size[1], 3).astype('float32')
y labels = df['Food Item'].values
y_calories = df['Calories (kcal)'].values.astype('float32')
```