PRODUCT CLASSIFICATION AND RECOGNATION

Date: 24/12/2023

LAIBRARIES

1. Python version 3.9.18
2. Keras , Tensorflow, Torch

PREPROCESSING

1. We start with Reading Data From Files
2. **Def read(data_path, file_name)**
   - We start by creating 2 lists (**image_path, labels**)
   - loop on class number in this loop we assign class it on **class_folder,** then concatenate (**data_path**, **class_folder**, **file_name**) and save it in **class_path.**
   - Create loop to Iterate through images in the current class folder
     Iterate on class path on it concatenate (**class_path, filename**) and assign it to **image_path** Then append **label** to **labels**
   - Return **image_path, labels**
3. **def preprocess_image(image_path, target_size=(224, 224), use_pca=False) this function used for:**
   - # Read the image
   - # Resize the image
   - # Convert the BGR image to RGB
   - # Normalize pixel values to [0, 1]
   - # Flatten the image if using PCA
     If use_pca=false
     > Applaying standardize pixel values, Apply PCA for dimensionality reduction
     > Reshape back to the original shape
     > return reduced_image

     else

     >return normalized_image

4. **def extract_hog_features(images):** Loop on images and extract features from them **using HOG algorithm.**
5. **def data_preparation(image_paths, labels, augment=False, type_model='classical'):**
   . iterate on image_path call **preprocess_image function** and append the result in **p_images list.**
   . **Data Augmentation:**If data augmentation is enabled (augment=True), the function utilizes the Keras ImageDataGenerator to perform various transformations on the images, enhancing the

dataset for improved model generalization.Augmented images are combined with the original images in the p_images list.Corresponding labels are duplicated to match the augmented data.
. HOG Feature Extraction (for 'classical' models): If the model type is 'classical', Histogram of Oriented Gradients (HOG) features are extracted from the preprocessed images using the extract_hog_features function.Data augmentation is then applied to the HOG features, and the augmented features are appended to the original HOG features.Corresponding labels are duplicated to match the augmented HOG features.
. Return:returns the preprocessed images (with or without HOG features) and their corresponding labels.

The Board, new principal, and guests were introduced. Mira Karlsson was nominated as the new Secretary. A motion to elect Mira was made by Angelica Astrom and seconded by August Bergqvist. All present voted in favor, and Mira Karlsson was confirmed as the new Secretary.

ADVISORY COMMITTEE

There are a number of parent openings on the Advisory Committee. These openings were listed in the most recent newsletter. Three parents indicated an interest in serving on the committee. August Bergqvist will follow up with those parents and do some additional recruiting to fill these openings.

BUDGET

The budget for the current school year was distributed by August Bergqvist, PTA Treasurer, and reviewed by the board and PTA members at the last meeting. In tonight's meeting, Angelica Astrom made a motion to approve the budget which was seconded by Allan Mattsson. All present voted in favor of approving the budget as presented.

PRINCIPAL'S REPORT

Principal Ian Hansson presented his report.

NEW BUSINESS

- Recap of Back to School night – September 9
- Parent Education Programs – Counselors
- Teacher Grants Application Process – School Principal

COMMITTEE REPORTS

Committee reports

- Membership
- Volunteers
- Newsletter
- Computer Support

ANNOUNCEMENTS

Enter Announcements

NEXT MEETING

1/16/23, Conference room

Motion to adjourn was made at 11:00 AM and was passed unanimously.