ViandNet Setup

This is the **ReadMeFirst** document for running and training the ViandNet: A Food Classification System using Two-Color Space Input Parallel CNN-SVM.

Files

The files are subdivided into two categories, **Training** the model and **Deploying** the model. The directories are:

↪ **Training**
↪ **Deployment**
↪ **Thesis**

Training contains the necessary files, which includes the Training and Testing Python Notebooks, the Dataset, the pretrained CNN models, and the SVM models.

Deployment contains the completed web application and contains the necessary files to run the Food Classifier.

Thesis contains the full paper soft copies, presentation slides, and the video demo.

Training The Model

Training the final Parallel CNN-SVM model, **PCNN_FINAL_RGB_XYZ**, can be done by running the python notebook `VIANDNET_Parallel_CNN_SVM_Training_Notebook_Final.ipynb`.

1. Head over to the **Training** and access the [3] Notebooks folder.
2. Create the following Sub-directories:
    - Dataset (Load the Dataset here, from [4] Dataset)
    - Features (For Saving and Loading Extracted Features here)
    - Models (For Loading the CNN Models Here)
    - SVM (For Saving and Loading the SVMs here)
3. Open `VIANDNET_Parallel_CNN_SVM_Training_Notebook_Final.ipynb`.
4. Locate the string instances where there is an `...PATH`, and replace it with the created subdirectories path.
5. Run each cell in the notebook.

Note: To train a specific color space pair, replace these parts in the code with the necessary information:
`COLOR_SPACE_A = ColorSpace.<Preferred Color Space>`
`COLOR_SPACE_B = ColorSpace.<Preferred Color Space>`

`CURRENT_MODEL = <Preferred Parallel CNN Model>`

Deploying The Model

The completed deployment package is already ready in terms of model loading and structured frontend. The only left thing to do here is install the necessary packages and run the web application.

Installing Python Packages:

Head over to the **Deployment** directory, and unzip the file **ViandNet_Web_Application.zip** to the same directory. Assuming that you already have installed `Python`, open the **ViandNet_App_Final** and park it in the terminal. install these packages through `pip install`:

1. flask
2. tensorflow
3. joblib
4. numpy
5. scikit-image

Running The Model:

1. Go back to the **Deployment > ViandNet_App_Final** in the terminal
2. Open the application by running this command `python app.py` in the terminal.
3. Wait for it to finish loading and access the localhost address, displayed in terminal after successful loading, on your preferred web browser.
4. Follow the onboard instructions to properly use the Web Application.
5. You can now use the ViandNet Food Classification System.