Object detection using Semi-Supervised Classification

Group Name: T02

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Overview:

We have implemented three semi-supervised models i.e. Label Propagation, Label Spreading and Gaussian Mixture Models. To run these models, the folder structure should be exactly the same as given by Pascal VOC Dataset. Below are the functionalities that are implemented in the code:

- Reads the images and separates the objects from the image.
- Computes the below features.
- Color Layout descriptor.
- Bag of Visual words using Surf Detector.
- Color histogram.
- Local binary pattern.
- Performs feature selection using ANOVA.
- Performs class balancing.
- Runs the label spreading using the predefined hyper-parameters on the labeled and unlabeled set.
- Evaluates the performance of the trained model on the unlabeled set and displays the accuracy.

Prerequisite:

- Code execution requires **Python 3.6**.

Installation:

- Install the dependencies required for the code to run from the requirements.txt file.
  pip install -r requirements.txt

Execution:

Pascal VOC Dataset file directory is required as an argument for code execution for all three models. For example: (..\VOCtrainval_06-Nov-2007\VOCdevkit\VOC2007\)

- **For running the Semi-Supervised Label Propagation Model:**
  python LabelPropagation.py --data ..\VOCtrainval_06-Nov-2007\VOCdevkit\VOC2007\

- **For running the Semi-Supervised Label Spreading Model:**
  python LabelSpreading.py --data ..\VOCtrainval_06-Nov-2007\VOCdevkit\VOC2007\

- **For running the Semi Supervised Gaussian Mixture Model:**
  python SSGMM.py --data ..\VOCtrainval_06-Nov-2007\VOCdevkit\VOC2007\