Machine Learning: Term Project_CS325

Goal: To expose students to research in machine learning in the application domain of computer vision.
Submission: The blackboard drop box for the final project
Team composition: Two students at most

PASCAL Visual Object Classes (VOC) challenge (http://host.robots.ox.ac.uk/pascal/VOC/voc2012/) has been used heavily by the computer vision community for the developments of machine (deep) learning algorisms in classification, detection and segmentation. There are 20 classes in total. The goal of your project is to develop a supervised machine learning algorithm (deep or not) that is able to predict presence/absence of at least 5 classes in a test image.

Requirement:

1. You pick at least 5 classes from PASCAL VOC, and download sufficient images to train and test your multi-label classification model.
2. You **design** your own method or **modify** existing algorithm(s). You should clearly cite the source of ideas if not your own.
3. Implementation of the algorithm, in any language of your choice.
4. A report in NeurIPS style, containing
    a. Abstract (5%)
    b. Introduction (motivation and problem definition) (10%)
    c. Literature review (at least 2 publications solving the same or similar problem) (10%)
    d. Methodology (detailed description of your algorithm). (30%)
    e. Experimentation (30%)
        1. Description of the dataset
        2. Description of performance measurement
        3. Validation process
        4. Results
    f. Discussion and conclusion (10%)
    g. References (5%)
    h. Appendix: Documentation of team member contributions if not an individual work.
5. NeurIPS format can be found at: https://media.neurips.cc/Conferences/NeurIPS2019/Styles/neurips_2019.pdf.

NeurIPS-Example-Paper.pdf is an example paper for your reference. Please pay attention to content page limit (8). References and the appendix are not considered content. A report not in NeurIPS format will receive 10 points penalty.

Materials to hand in:

1. The final report
2. Well-documented source code