The Car counting & and Whale identification challenge(s)
Semester 2019a (Submission date: 27/1)

This year you may choose one of two challenges:

1. Car counting
2. Whale identification

The work is individual.

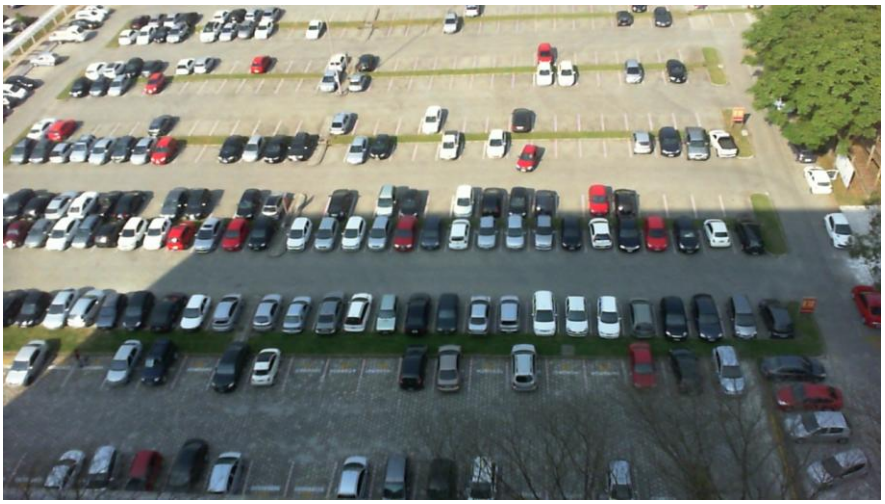
Car counting

In this challenge your goal is to build, train, and test a model that is able to count cars in parking lots. The dataset for this challenge can be downloaded from: https://lafi.github.io/LPN/ (no need to fill out the form; password is hsieh_iccv17).

The performance of the model is measured in terms of Mean Absolute Error (MAE) and Root Mean Squared Error (RMSE). A script for estimating MAE and RMSE is included in the dataset.

$$\text{MAE} = \frac{1}{n}\sum_{j=1}^{n}|y_j - \hat{y}_j| \quad \text{RMSE} = \sqrt{\frac{1}{n}\sum_{j=1}^{n}(y_j - \hat{y}_j)^2}$$

Here is a sample image from the dataset:



Use the train/test split provided by the authors in "ImageSets" folder.

Ground truth provided in "Annotation" folder.

Whale identification - Can you identify a whale by its tail?

All details can be found at:
https://www.kaggle.com/c/humpback-whale-identification.

Note: database of over 25,000 images.

Register the competition and follow the given rules.

- Explore the site(s) and the dataset(s) if you haven't done so already
- Use any of the methods learned in class
- Use any method you can find a description for in any paper
- Implement it yourself in Python
  - Including OpenCV and scikit-learn, as well as deep learning libraries such as Keras, Tensorflow and PyTorch.
  - DO NOT USE UNAUTHORIZED CODE
- May ask for additional tools if necessary
  - Individual request

- Documentation
  - Up to 10 pages (not including code snippets)
  - Cover all aspect of your work
  - Show results
    - MAE+RMSE
    - Kaggle's score
    - Other measures if applicable
  - Explain your method and why you chose it
  - This file is very important for grading

- Code submission
  - Source code should be well-commented
  - Code must be stand alone (and running)
  - Detailed usage instructions
  - Pickle file or other applicable format with the final model

Late submission:

- Expected to be submitted on time
- Otherwise 2 points per late day (3 days grace)
- Up to 40 points == 20 days late
- Later than that – the course is failed :(

Grading:

- Accuracy (how well did you do)
- Novelty (how new is your idea)
    - May build on existing ideas and still be novel
- Performance (how fast do you do it)
- Document and code organization
- Final grade is on a curve - if your method performs worst, you'll get the worst grade and it will probably be low
  Note: your work will be compared only to students who chose the same challenge as yourself, using "similar" methods (i.e. shallow/deep learning).

Plagiarism:

There is a lot of code available out there. Please write your own code (based on allowed components). DO NOT USE UNAUTHORIZED CODE. Needless to say that any sort of plagiarism is unaccepted and will lead to failure in this course.

Good Luck!!