Project PC : Visual Attention

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In this project, you will apply what you have learned in the labs to real use cases. The goal of this work is to use and to evaluate visual attention models, using eye-tracking datasets.

You are asked to write a (short) report on this work, and to provide the code necessary to produce all of the results and figures. You can use parts of the code that you used during the labs.

1 Choose a dataset

From the list of datasets that we provide[1], choose one. Write a short summary of the paper associated with the dataset, to describe the experimental conditions in which the data was gathered. Analyze the kind of data that you will be working with: what sorts of images, what are the challenges associated, what are the limitations of such dataset, etc.

2 Extract ground-truth data

Apply the methods seen in the lectures and labs to extract the ground-truth data (i.e. saliency and fixation maps). What can you observe? (for instance, centered-bias? High or low clustering of the gaze tracks?)

3 Choose (at least) two models

One deep and one non-deep. Write a short summary describing the models and their specifics. We provide you with a list of models (alongside with some code for them), but feel free to choose other models in the literature!

4 Apply and evaluate the models on the dataset

Apply the models on your dataset, and evaluate the results against the ground-truth. What kind of results do you get? Does it answer (and how) the initial

[1] `https://uncloud.univ-nantes.fr/index.php/s/ix6QnAHHW8GEHKK`

problematic for which the dataset was collected? Compare the outputs of deep and non-deep models. You can compare them not only in terms of performances, but also runtime for instance.

BONUS: Fine-tuning

You can try fine-tuning the deep-learning model that you used. How does it improve results? Of course, use all of the necessary precautions to evaluate this (create a separate test subset, etc).