Report Title*

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***Abstract*—Here you will have to write a short presentation about you report (up to 150 words max). what is it about; what are the challenges; what do you intend to do to face some of these challenges.**

***Index Terms*—Here you will have to write some terms that can be associated to you work up to 5 terms (For example, first term can be: Deep Learning)**

I. Instructions

To use this template **you will need to substitute all guideline text with your own remarks and conclusions**. You can maintain the section division (titles) so that reports follow a pattern and its easier to be corrected. The template and questions are guidelines to help you on your report, but feel free to add or remove what you think is necessary. This report is not meant to be super long, **you must fit everything in up to 5 pages** including the reference section (writing the most import aspects of your study is key). The report can be written in french or english. The notebook with your code, your annotations, and results should also be submitted with the report. **- Remove this Instructions section when finishing your work. Start the report with the Introduction -**

II. Introduction

Here you will have to write a short introduction to the problem 2-3 not too long paragraphs. The introduction should present a problem, discuss its importance, its challenges. The reader should understand why your work is important and therefore want to finish to read your paper.

III. Related Works

Here you will have to write a short discussion about other already existing papers that are related to the topic of your work (In this case you can find papers related to Face recognition. At least 1 that does not use deep learning and 1 that uses deep learning). For this report you can cite 3 works. You can write 1 brief paragraph for each work where you need to talk about their strategy: what database was used, techniques to treat the data, model, if the results were good or not and why, could you find a flaw and why and if possible a proposition that might improve this paper.

IV. Proposition

Here you will need to write about each of the topics that you worked on TP7.

A. Face detection

Write a short first paragraph on what is face detection (try to cite 1 work that you got this information from)

Write a paragraph discussing the topics of:

- Talk about the data you received for face detection (what are the dimensions, how many images are there, etc.);
- Why do you need to do face detection for this data for your work ?
- What were the data pre-processing techniques you used ?
- How did you divide training and test ?
- Discuss about the small convnet you use, give a brief explanation of why you created it this way;
- Discuss about your small convnet performance on the test set;
- Does the result improve when you change : the number of layers, number of hidden units, learning rate initial value ?
- If possible include images (face before detection - after detection, performance graphs of your model, comparison between models, etc)

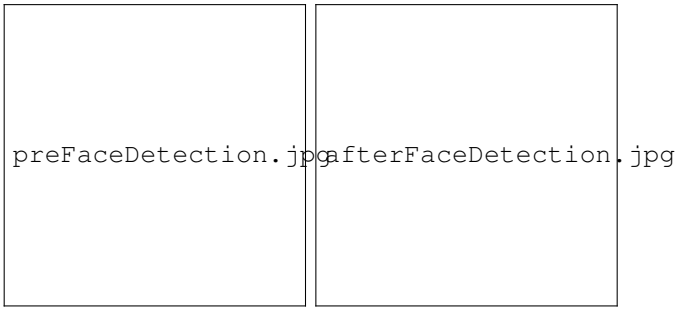

Fig. 1. Image caption.

B. Pose estimation

Write a short first paragraph what is Pose estimation (try to cite 1 work that you got this information from)

Write paragraphs discussing the topics of:

- Talk about the data you are now using for pose estimation (what are the dimensions, etc.);
- Why do you need to do pose estimation for pose correction for this data for your work ?

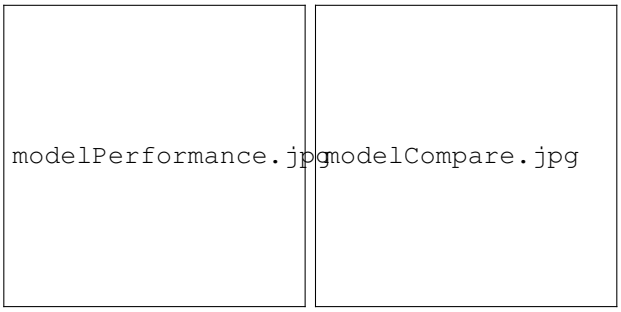

Fig. 2. Image caption.

- What were the techniques you used for pose estimation ?
- How did you divide training and test ?
- Discuss about how your previous small convnet models performs on this test set;
- Does the result improve ?
- If possible include images (New image sample of training image after pose correction- previous and after-, performance graphs, comparison between models, comparison between the performance of the model with this data and just the previous step, etc);
- Why do you think the results improved ?

C. Face encoding

Write as the first paragraph what is Encoding - if you can be specific try to explain in the context of face encoding- (try to cite 1 work that you got this information from)

Write paragraphs discussing the topics of:

- What is the advantage of face encoding ?
- What is the data that you are going to be using during face encoding ?
- Discuss what the data becomes after face encoding;
- Discuss about your training model for this new data;
- Does the result improve ?
- If possible include images (performance graphs, comparison between models, comparison between the performance of the model with this data and just the previous step, etc);
- Why do you think the results improved (or why not)?

D. Face recognition

Write as the first paragraph what is face recognition (try to cite 1 work that you got this information from). What is the difference between face recognition and face detection ? Write paragraphs discussing the topics of:

- What are the classifiers you chose to do this task ? Why ?
- Discuss about the performance of each classifier in this task;
- What is your best classifier ? Write about the performance;
- If possible include images (performance graphs, comparison between models, etc);

E. Personal dataset

- Talk about how you created your dataset;
- Does your model work on your personal set?
- How is your model's performance in your dataset compared to the previous dataset? Is it good/bad ? (What is you opinion on why)
- Compare your dataset to the original data;

F. Extra - Bias analysis

- What is bias ?
- Why is bias a problem in machine learning ?
- Can you comment on a situation where bias can be a problem ?
- Did you create a set trying to diversify your input examples ? (Is it all from the same person ?, Do you present different people ethnicities to verify if the model had bias towards some specific group (meaning better performed in one group)?)
- Can you think of some statistics to calculate and present based on the the original face detection data ? What about you data ?

Conclusion

Here you need to summarize in 1-2 paragraphs this work and what you learned.

References