V & CS: PROJECT PROPOSAL

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TASK

For our project we have chosen the task of correctly localizing facial keypoints on images, and in particular we will focus on facial landmark detection on pictures of animals.

DATASET

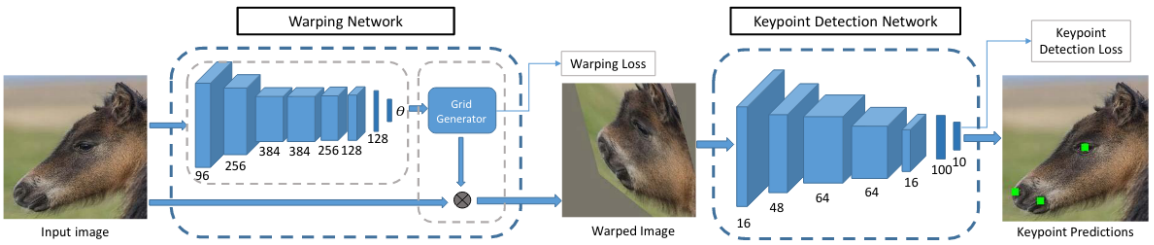
We will use the horse dataset that is reported in [1] for the warping network and to test the final architecture.

The facial keypoint detection network will be trained and tested on:

- AFLW [2]
- The dataset available at [3]

ARCHITECTURE

The idea for the project is to modify the existing architecture proposed in [1].

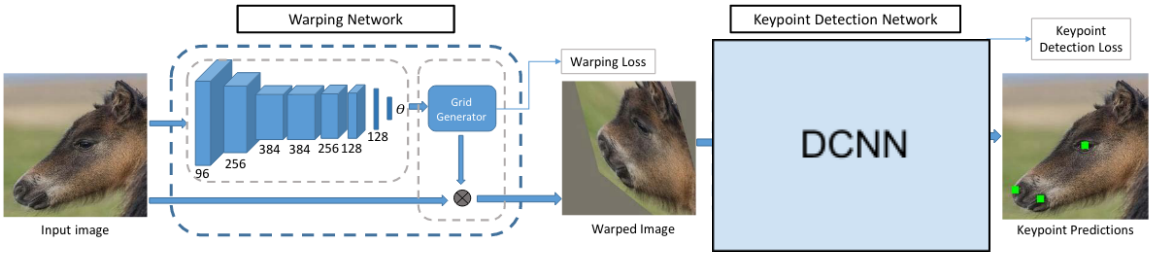


The original architecture

Authors have built an architecture composed of a warping network, whose job is to transform horse pictures in such a way that they are "more similar" to a human face, and a simple facial keypoint detection (from now on FKD) network, which is essentially a CNN.

We propose to replace the FKD CNN with a more elaborate CNN, called DCNN (Deep Convolutional Neural Network), as described in [4].
The idea is to preserve all the "context", and only replace the underlying FKD network: the DCNN will be trained with the same dataset that the authors used for the original CNN, and everything else will stay the same.

In this way the newly obtained system will be comparable with the original one, andby using as evaluation metrics the criteria proposed by the authors themselves we will be able to measure performance differences and eventual improvements.



The proposed architecture

REFERENCES

[1] Interspecies Knowledge Transfer for Facial Keypoint Detection, Rashid & Gu & Lee

[2] https://www.tugraz.at/institute/icg/research/team-bischof/lrs/downloads/aflw/

[3] http://mmlab.ie.cuhk.edu.hk/archive/CNN_FacePoint.htm

[4] Facial Keypoints Detection using Deep Convolutional Neural Network - NaimishNet, Agarwall & Krohn-Grimberghe & Vyas