Face and body detection in images of crowds using Recurrent Neural Networks

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Abstract—This proposal highlights the objective of using recurrent neural networks in order to detect and highlight faces in images. The speciality about this method is that compared to other classification methods, this method does not require post processing and classifying but it straightaway gives the output by highlighting the faces in test images. Special elements called LSTM (Long Short Term Memory) are used in this method to give the best training and test accuracy.

Index Terms- Convolutional Neural Networks, Face Detection, LSTMs.

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1 RESEARCH QUESTION

This proposal aims to optimize traditional face detection algorithms and I am using [1] as my base paper to implement. The system that I aim to implement uses a combination of convolutional neural networks and a set of recurrent LSTM units that produce variable length outputs [1] and based on the input of previous LSTMS, updation of output boundaries will be done. The LSTMs carry information from previous steps to generate boundaries. The big picture of the project is given in the image below (Fig 1), taken from [1].
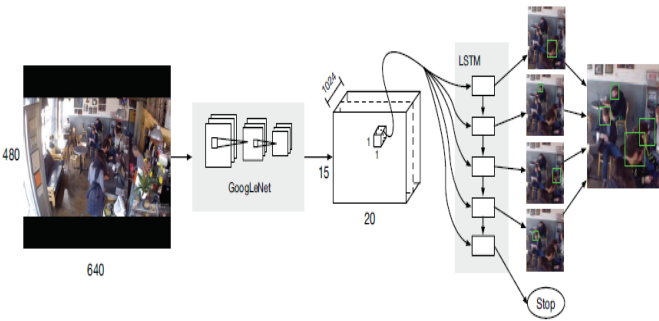
project is as follow
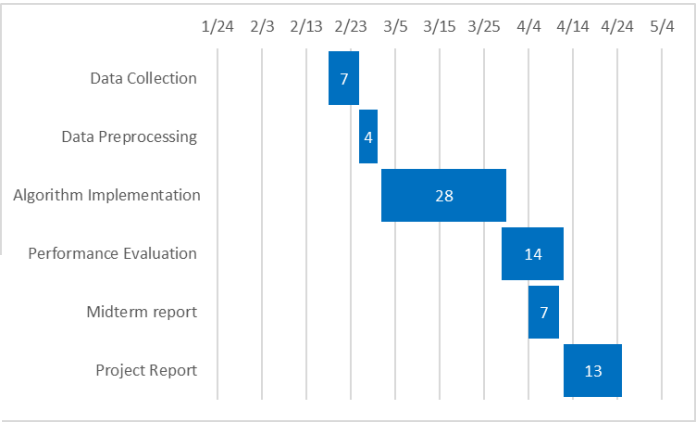
2 EXPECTED EXPERIMENTS

The experiments that will be performed to evaluate how well the network is performing, I will use two similar datasets consisting of images of crowds from a public cam, and try different schemes like using one dataset for training and a subset of the second dataset for testing, or even a hybrid dataset consisting of a mix of the types of images in these datasets.
I have yet to decide what open source dataset I will be using but as proposed in [1], I may end up using the TUD-Crossing [2] dataset as one of my dataset.

4 TIMELINE OF DEVELOPMENT

Since I am the only team member, I plan to consistently work on the elements of this project. The division of this

REFERENCES

[1] Russell Stewart and Mykhaylo Andriluka. End-to-end people detection in crowded scenes. arXiv preprint-arXiv:1506.04878, 2015.

[2] M. Andriluka, S. Roth, and B. Schiele. People-tracking-bydetection and people-detection-by-tracking. In *CVPR 2008*.