1 Technical Update: A Humanlike Predictor of Facial Attractiveness

In this section we will see how we can add some technical enhancements to update the existing methods in the paper in its Machine Learning Related Components to perform better. This will help us to improve and can be a possible upgrade for the future version of this paper. By adding in objective measures of overall attractiveness – and a dash of machine learning – creating models capable of learning what traits matter the most.

1.There are three major improvements that I'd like to propose: As an upgrade/update, instead of restricting the dataset to work on with American females, we can have different types of females and from various regions with the same neutral facial expression and with no distractions like jewelry or we can also, help it train with both female and male rather than just narrowing it to only females. Including the raters, we should have a varied group of raters for rating the photographs because everyone has a different choice and perspective of "beautiful" or "attractive", keeping aside the personality traits or body type or any related feature and just focusing on the face to determine which would end up having the most rating. Different regions, different cultures lead to different face type, skin color, hair color, eye color, skin texture, eye size, forehead size and many more features which should be looked upon to categorise facial attractiveness.

However, it is very difficult to develop a big enough face database and to collect ratings for all the faces. A usual way to achieve this would be to collect ratings for faces in which specific areas of the face are parametrically manipulated in terms of size or shape. However, changing some relevant dimension of the facial features is not appropriate for this case because the classifications of facial features are based on their overall appearance. Perhaps, creating an online poll and letting everyone vote on their preferences to collect a proper dataset to compare to.Then, we can extend this to predict objective judgements of attractiveness such as those made by the public after viewing online profiles of the volunteers. There are more than one factor that affects the attractiveness of the face like age, region, ethnicity etc.

On the other hand, we have followed a mixed feature-based/image-based approach to obtain the effect sizes of the appearance of the features. We have established a reduced set of relevant specific attributes to describe a face and used an image-based approach (PCA i.e. principal component analysis) to categorize these facial features by their global appearance. Therefore, although the faces were described by variables, the configural information of the faces is not explicitly considered to obtain the effect size of the facial features.

2. In the psychophysical part of the paper, they have created averaged faces using morph tools they reported that average faces made of 16 and 32 original component images were rated higher in attractiveness than the mean

attractiveness ratings of their component faces and higher than composites consisting of fewer faces. Since blurring and smoothing of faces occur when faces are averaged together, the smooth complexion of composites may underlie the attractiveness of averaged composites. Moreover, it is not possible to find real faces with all the possible combinations of facial features. Also, the dataset can be preprocessed better by building a method that takes care of the coordinates and manually adjusting some features in some images that aren't automatically extracted. Data standardization is important before using PCA(principal component analysis). Missing out on valuable information while training the data might hamper the final predictions and results of the model stating some not so attractive person to be attractive and vice versa. Ultimately, this system could even be used to advise people on how they can make themselves more attractive to a wider range of people. One only has to look at the billions of dollars spent every year on makeup and cosmetic surgery alone to realise that there is a great public interest in what people can do to enhance their attractiveness.
3. We all know about CNN(convolutional neural network) that is convolutional neural networks which is a deep learning algorithm and is very powerful for the analysis of images. They are made up of neurons with learnable weights and biases. Each specific neuron receives numerous inputs and then takes a weighted sum over them, where it passes it through an activation function and responds with an output. We can use CNN(convolutional neural network) for image processing as the main advantage of CNN(convolutional neural network) compared to its predecessors is that it automatically detects the important features without any human supervision. This is why CNN would be an ideal solution to computer vision and image classification problems. The purpose of CNN(convolutional neural network) is mainly in image analysis tasks like Image recognition, Object detection Segmentation. So, CNN(convolutional neural network) can result in greater accuracy but since it is a neural network it'd take time to process, we can experiment using both the models checking which would end up having a more accurate and satisfactory result when compared with the human ratings. Hence, considering a different algorithm like CNN might be useful to experiment with. Although the paper was well written, documented and presented we can still use the above listed updates/upgrades and can expect to have a better performance than presented in the paper.