Facial Attractiveness Analysis

by

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ABSTRACT

In this project, we wish to analyse 3 aspects of facial attractiveness and how people judge various faces on the grounds of these 3 features, confirming work done by our references and analysis to discover something new. There have been studies to relate attractiveness with facial features in the past. People have taken specific points under consideration like estimated age by looking at photo, expressions, physique like fat, thin, sallow, skin color etc. We wish to examine the work firstly on symmetry [1], [2], then on averageness[3], and finally on sexually dimorphic features[]. Facial symmetry shall be studied based on experiments recording the audience's response on normal faces and those against symmetry mapped faces of the same image. Averageness will be considered with rating pictures of a person individually vs their aggregate picture and with an average of all pictures under the experiment. Sexually dimorphic features will involve comparison between images of the same person under different features such as makeup, facial hair, hair style etc.

INTRODUCTION

People have always had their preferences regarding potential mates, continuously classifying them mentally according to attractiveness. There are evolutionary explanations for attractiveness judgments so as to choose a partner in a way that will help in gene propagation.psychological hypothesis to study facial attractiveness is that these judgements reflect an individual's health. They investigate it by studying how attractiveness judgements give hints about the mechanism for detecting special cues to assess an individual's phenotypic condition.

Analysis of facial symmetry has been done in the past with overall results being ambiguous, some reporting symmetrical faces to be more attractive, while others reporting otherwise. The methods used shall take into account the amount of symmetry in normal photos post their rating. This will rule out the possibility that a normal image be termed as attractive be taken as asymmetric even though it might have considerable symmetry. There are many possible ways to measure symmetry, like overlapping on half of image with other and calculating the difference.

Average images tend to be more pleasing than a real photo according to past studies. We plan to add a questionnaire to go along with the pics in order to better analyse the underlying reasons.

Sexual features can have a phenomenal effect on a persons choice and can vary greatly between people. Past studies have suggested that faces having extreme secondary sexual features tend to be more attractive, with evolutionary basis being that such people tend to be better candidates for gene transfer and propagation.

METHODOLOGY
As mentioned above, we will be examining three aspects that affect human perception of facial attractiveness. For each part, a dataset of fair number of images will be required. We propose to make use of the following datasets according to the need of the experiment:
- Face database provided by course students for assignment 2.
- AR face database
- CVL database
- Physiological image collection at Stirling (PICS)
- Yale face database
- 2D Face sets.

Experiments will be done on the lines of protocols used in previously published literatures.

1. Symmetry, [1] [2]: Volunteers will be asked to rate (attractive, dominant, healthy, sexy) different images from a database. The symmetry of the rated images can be quantified by distance between outer and inner eye corners, each eye size, jaw width, mouth width, [4]. Or, by overlapping the tho halves of each image.
2. Averageness, [6]: Images from assignment two will be suitable for this experiment. Number of images of the same face will be used to create a composite, average image which will be contrast enhanced and smoothed to render final average composite image. The ratings of these composite images will be compared to those of the original ones.
3. Sexual Features (facial hormone markers), [7]: In this experiment, ratings will depend on the gender of volunteers. They will be asked if they will select the person for dating and relationship. Also, they will be asked to rate hormone markers (like eyebrows, lips). Images with and without facial features like high cheekbones, beard, moustache, lips, long/short eyebrows etc shall be considered by the participants of the experiment.

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