



D62 Facial Comparison of Persons Using Pictures

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This paper describes a standardized procedure to perform facial comparisons, in order to make the process of performing facial comparison as objective and consistent as possible.

This presentation will impact the forensic community and/or humanity by presenting a method for visual comparison and some preliminary results without matching methods like 3-point techniques or 3D laser scanning.

In all current, and probably most future applications for facial recognition, the final confirmatory check of the identity of a person with a travel document is done by visual matching. Especially in criminal cases, where the available evidence mostly is limited, but the correct identification of the criminal is crucial, the final decision will also be made by means of a visual check. However, this process is still subjective, and clear guidelines on how to perform such a comparison are hard to find. Therefore, we developed a procedure to standardize facial comparisons as much as possible.

Preferably, a comparison will take place with pictures taken from the same camera position, and from the same distance. If these are available, one-to-one metric comparison is possible. If a person and original camera equipment are available for comparison pictures, we use a three-point matching method to position the person according to the available pictures, and a direct comparison can be made. If the original equipment is not available, or the position of the person is hard to estimate, a 3D laser scanner could be used to take comparison pictures, followed by calculation of the most likely camera position and properties. However, in a lot of criminal cases, no additional comparison pictures can be made (e.g., when a crime suspect is still at large), and comparisons have to be performed using pictures from different time periods, camera positions and camera distances.

The method we developed comprises description of general information concerning the material, and scoring of general facial features (contours, relative measures, and positions), specific features (eyes, nose, ears, mouth, neck and throat), facial lines, folds and wrinkles, and typical like scars, moles, tattoos and piercings. Facial anthropological features are visually compared and classified as:

- SD. Similar into Details. Imaging conditions for this feature have been so good that it is to be expected that all details are visible.
- S. Similar. Imaging conditions are not optimal, in a sense that differences might be invisible.
- NO. No Observation. Observation is not possible due to circumstances.
- D. Different. Observed differences may be explained by differences in the imaging conditions.
- DD. Different into Details. Observed differences can only be explained by assuming that the features are physically different. Features that cannot be compared due to large differences in age, facial expressions, or pose are classified as "NO."

Apparent similarities and differences are further evaluated by classifying features as:

- SD Strongly discriminating (e.g., the shape and position of a scar, a mole or a pattern of moles).
- MD. Moderately discriminating (e.g., a detailed shape of mouth and lips).
- WD. Weakly discriminating (e.g., the shape of the skull or the nose).

Conclusions from facial comparison are reported as level of support to the hypothesis that the persons depicted in the reference and disputed images are the same and/or as level of support to the hypothesis that these persons are different. The following levels of support can be given: 'very strong support,' 'strong support,' 'moderate support,' 'limited support,' 'no support.' In cases with similar support to both hypotheses, no conclusion can be drawn due to discrepancies.

Note that conclusions are not given in terms of probability, since to our knowledge insufficient quantitative data are available on the distribution of facial features in human populations. The estimation of the discriminating power of features and combinations of features is based on practical experience with facial comparisons.

It is our experience that using the above method, with a systematic list of features to be checked, forces the investigator to consider similarities and differences in a relatively objective way. The set-up of the systematic list will be used as a starting point of a system using statistical data on frequency of specific features, offering the opportunity to make the process even more objective.

Identification, Facial Comparison, Objectivity