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A hairstyling software

Almost all the people in the world face the common problem of selecting a suitable haircut. With the coming of civilization this has become a routine activity. Since the advent of the computer, it has been possible to simulate a person's appearance in with different hairstyles / haircuts. Even though experienced stylists are able to do this effectively, inexperienced stylist and typically those who work in rural areas do not have this ability. The work that forms the basis of this paper is aimed at addressing this issue. It is based on image processing, artificial neural networks and expert systems. The first process done by the system is to determine the face shape of the candidate. This is done by first using image processing techniques to isolate the boundary of the face then classifying the face shape into one of four different categories. Several neural networks were trained to perform this categorization, but the configuration that produced the best results on the test set was a network with 31 input layer neurons and four hidden layers with 15,40,20,10 neurons respectively. The output layer consisted of four neurons. This configuration was able to achieve an accuracy of 68% on the testing set. Once the face shape has been determined it becomes necessary to analyze facial features of the candidate, in order to select a further customized hairstyle. These features include the size of the eyes, the shape of the nose, the distance between the eyes etc. For this purpose an expert system was developed. It is able to determine a set of features of hairstyles, which will better suite the candidate. The expert system is also able to recommend a coloring type should the candidate require his hair to be colored.

Several hairstylists, experts in the AI arena and ordinary people evaluated the system. 80% of the hairstylists who evaluated the system were satisfied with the systems ability to recognize face shapes for hairstyling purposes. 70% of the evaluators agreed that the prototype was flexible and that it is easy to use. To conclude the prototype was shown to have achieved all stated objectives.