Synopsis of Original Research Paper

A Computational Approach to Hairstyle Fitting Based on Statistic Leaning

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Hairstyle is one of the most important features people use to characterize one's appearance. Since whether a hairstyle is suitable or not is relied on the aesthetic sense of human, it is difficult to model the suitability mathematically. We focused on the fact that the suitable hairstyle is related to one's face shape. This research proposes a new technique for automatically retrieving a suitable hairstyle from a collection of hairstyle examples through learning the relationship between face shapes and suitable hairstyles. Wee first designed the facial feature vector that are relevant to hairstyle. Aesthetic knowledge on face and hair stylists' ideas are used to design the facial features. And for producing realistic hairstyle images, we use matting and thin-plate-spine interpolation to improve the synthesis result. The four major contributions of this project can be summarized as follows: 1. A new framework for retrieving suitable hairstyles through learning the relationship between facial shapes and hairstyles from successful hairstyle examples. 2. The design of a compact feature vector space enabling fast non-parametric sampling in statistical learning. 3. A method of hair-face image composition utilizing modern matting techniques for synthesizing realistic hairstyle images automatically. 4. An evaluation experiment demonstrating the validity of the feature vector and the effectiveness of the example-based approach. Experiments have been conducted to investigate how different features of face shape can influence the results. The effectiveness of the proposed technique was validated through subject studies.