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Abstract
The handy equipments such as digital cameras and cellular phones with camera function provide a convienient way to capture images. Therefore, the additional demands such as image management, image annotation, and image retrieval have become the major issues.
In this thesis, we will focus ourself on the face annotation problem and propose a feasible solution. The major concern in face detection and recognition problems is the accuracy in recognizing the people in the photo with the exact identity. Many factors could influence the accuracy of face detection and face recognition. In this thesis, we propose a semi-automatic approach to solve these problems. First, we use a non-linear YCb'Cr' color space transformation to detect the location of skin color, and then we search the face positions by using the geometric properties of faces. Here we make an assumption that people generally wear the same clothes in taking a series of photos. While the faces are located, the RGB values of the clothes beneath the faces are used as the features to represent the faces. In order to simplify the color feature of clothes, we use K-means clustering to analyze this cloth block and select the major color as the cloth feature. The LVQ algorithm training process is repeated to make the color distributing between different cloth blocks more clear.
We have developed a sytem to verify the proposed method. The sytem is performed as follows. First, the system automatically locates the face position and computes the corresponding cloth feature. User gives a name or text description to this face, the correspondence between the face and the annotation text has been established. The system will detect the face positions in a series of photos and give the detected faces the existent annotation text. If the annotation does not match to the detected faces, user can add a new annotation or correct the wrong matchings. The experiment shows the proposed method can achieve a good performance in face annotation and recognition. It also provides a convient tool to manage and retrieve the huge amount of digital photos.
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