The Skin Problems Detection System

Progress Report3

DP 39

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Group Meeting Time: 24th.Oct, Blob function Improvement
27th. Oct, Discussion and Research
30h.Oct, Data Generation Implement
Advisor Meeting Time: 1st, Nov

Engineering Tools:

1. Since this project is mainly software development. The necessary equipment we need is still laptops.
2. The photoshop can help us analysis the methods to merge, blend images. We also need to crop acne images from the source images and do some appropriate adjustments to these images.

Team Work:

For the third progress, we divide our tasks equally. Zhuzhen are responsible for doing the research about how to generate the acne image. Specifically, how to copy one object of a image and paste it into the other image, and then make the composition looks natural and seamless. Xinquan are responsible for continuing adjust the parameter of the blob function, use assistant methods to improve the accuracy. We start to use the opencv to implement the acne selfie generation program together.

Impact on the Environment:

Same as the Progress one we mentioned, the greenhouse gas which the data center and our laptop produces is harm for the environment.

Ethics and Equity:

According to the experience we run business, more and more customers become cautious about their own data and privacy protection, since there are lots of serious consequence for privacy leakage. The system we development is aiming to input selfie of customer and then analysis skin type and problems. However, we think if the system is opened to public, we need to develop additional function, which is able to input the image for part of face skin and then do analysis. This way can eliminate the privacy concern of customers because the image does not show their personal identities. To achieve the same light environment and distance to take pictures when customer use our system, maybe we need to develop hardware assistant equipment to install on the camera of the phone in the future.

Life Long Learning:

We have learned and implemented several ways of face detection and blob method, Recently, we did some researches about merging images. One way is using roiImg.copyTo function, which can copy one image and paste on the other one bigger image. However, the disadvantage of this method is the result image looks fake since they are just directly combined together. The other way is seamlessClone method, it is a useful function because if we create a very rough mask around the source image then do the seamless clone to the destination image. We can get the pictures looks natural.

Recent progress:

1. After convert the source selfie image to LAB color space and get the A channel image of it, we use the threshold function to convert this A channel image to black. The information left in this image is mainly the acne part. Then we continue use the blob function to find acnes. Loop the parameter inside the threshold and blob functions to get the better results.
2. Did researches about how to merge images. Learned and implemented the roi and seamlessClone method to generate our acne data.

Future Plan:

1. Use the methods we found to generate more than 500 selfie images which contain acnes. The acnes should appear on left or right cheek, jaw or forehead. Use different acne and selfie images to generate new data images, since we need use these data to train model, the system need have ability to detect different shapes of acnes. (15th, Nov)
2. Label these acnes position on the images to prepare train our deep learning model. Since most of images are generated by ourselves, we know the exact position of acnes. (20th, Nov)
3. We start to build the framework of deep learning model by using Keras. (30th, Nov)