Image Processing Project Proposal
Digital face makeup generation

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Abstract

In this project our aim is to implement an automated algorithm on face makeup building. It can be done by processing the face and recognizing face parts as accurate as possible and adding the required modifications on colors/hue that correspond to face parts.

Researching required information/techniques

1. Research basic Pattern Recognition techniques.
2. Study some papers about the topic, specifically:
   (a) Adaptive Digital Makeup
   (b) Digital Face Makeup by Example
   (c) Digital Makeup Face Generation

An approximate digital makeup algorithm

1. Image resize for better fitting.
2. Perform skin segmentation, face detection (probably some ideal high pass filter resulting in a binary image). Possibly, extract several face layers, like structure/color/details.
3. Detect the face parts (eyes, lips, etc) within the detected face.
4. Maybe gender determination (optional).
5. Skin tone preprocessing.
6. Getting some database of makeups/faces would be nice.
7. Apply digital makeup:
   (a) apply some smoothing filter to remove unwanted details.
   (b) perform color balancing / image enhancement.
   (c) apply makeup on face regions (lips, eyes, cheeks etc.) based on reference database or user preference. Possibly, use a reference wanted-makeup image of a different person. Use some blending methods.

General Info

Programming Language: Matlab or python (only one of them not both)