Project Abstract

Project : Digital Face MakeUp Transfer

1. Introduction

1.1. Problem Statement :

The problem focuses on the fact that for a person it would be extremely helpful if a he/she can preview the makeup effects on her/his face without actually applying the makeup.

Figure 1

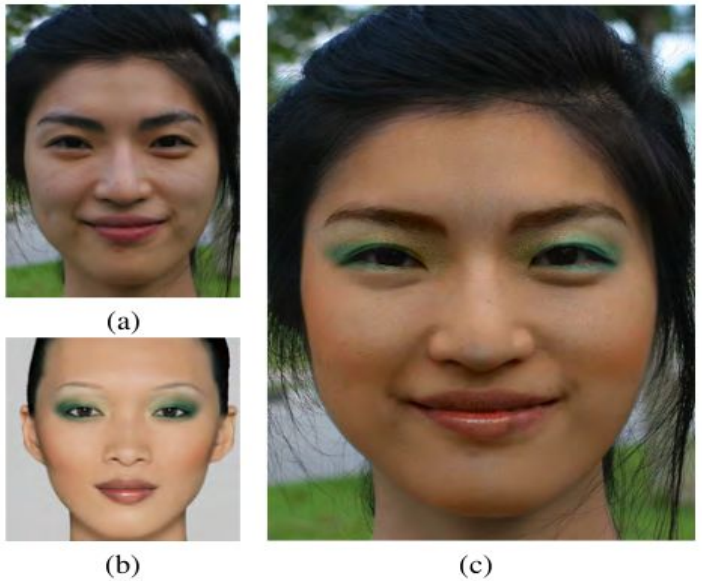


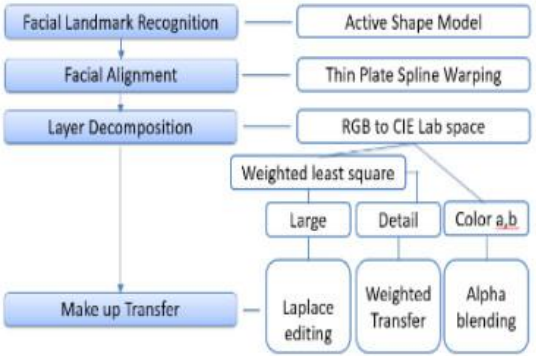
Figure 1.
(a) A subject image, taken by a common user.
(b) An example image,taken from a professional makeup book.
(c) The result of the approach using which foundation effect,eye shadow, and lip highlight in (b) are successfully transferred to (a)

1.3. Inspiration :

Our approach is analogous to physical makeup, as we modify the color and skin detail while preserving the face structure.

2.Overview

The approach is inspired by the process of physical makeup. First, we decompose the subject and example images into three layers separately : face structure layer, skin detail layer, and color layer. Ideally, the face structure layer contains only the structure of every face component, such as the eyes, nose, mouth, etc. The skin detail layer contains the skin texture, including flaws, moles, as well as any wrinkles. The color layer represents color alone. After the three layers are decomposed, transferring makeup can be considered as transferring the skin detail layer and color layer from the makeup example to the subject image while preserving the face structure layer of the subject image.



3. Workflow

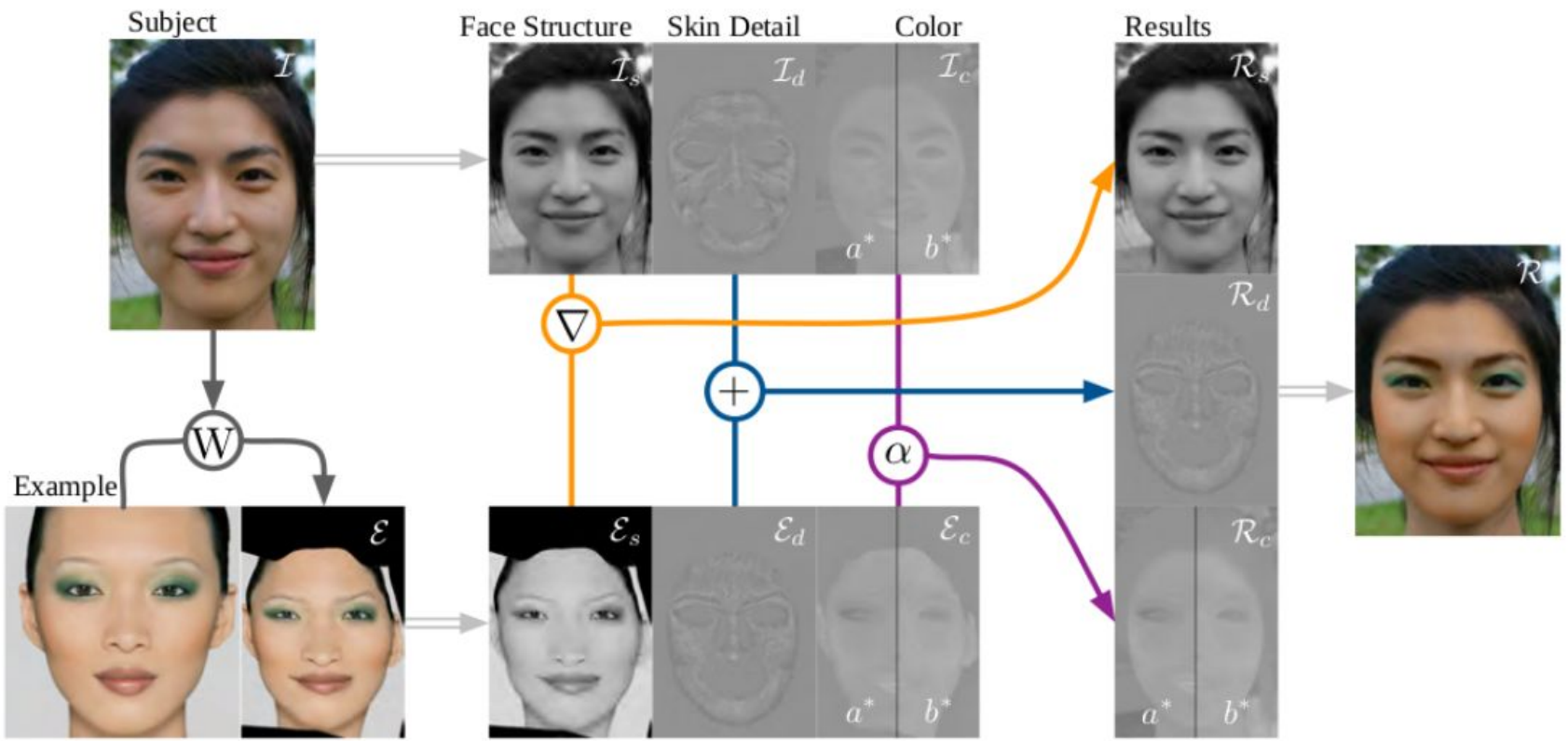


Figure 2. The workflow of our approach. W denotes warping. ∇ denotes gradient editing. + denotes weighted addition. α denotes alpha blending. In this figure, the value of skin detail layer, *i.e.* $\mathcal{I}_d$ and $\mathcal{E}_d$, is exaggerated 4 times for better visualization. Our approach consists of four main steps: face alignment, layer decomposition, makeup transferring, and layer composition.