

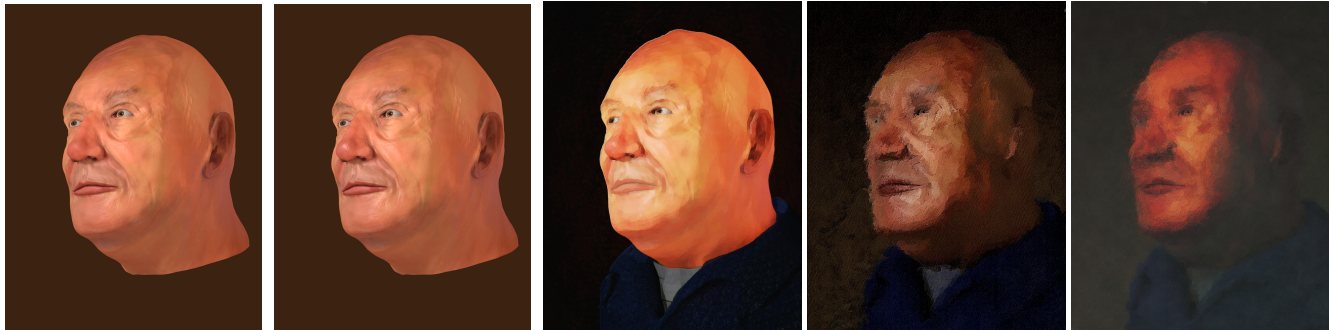
Shading with Painterly Filtered Layers: A Technique to Obtain Painterly Portrait Animations

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(a) Rendering with only diffuse rendering. (b) Rendering with diffuse and specular reflection.

(c) Three examples of our painterly portraits.

Figure 1: Examples of results from our method. Diffuse rendering in (a) is obtained using a Barycentric shader that interpolates three texture images. The illumination parameter is a lump sum of all illumination coming from lights and ambient occlusion. (b) shows an image obtained by adding subtle specular reflection effects. Our painterly portraits such as the ones in (c) are obtained by filtering all layers separately

ABSTRACT

In this manuscript, we describe a process that can be used to create still and/or animated portrait paintings to be shown in Expressive Art Exhibit. Our process consists of two stages: (1) Creation of control textures for a Barycentric shader by using color information gathered from photographs to provide realistic looking skin rendering; (2) Filtering and compositing the layers of images that are obtained by control textures, which correspond to effects such as diffuse, specular and ambient. To demonstrate proof-of-concept, we have created a few rigid body animations of painterly portraits under different lighting conditions.

CCS CONCEPTS

• **Computing methodologies** → **Non-photorealistic rendering**;

KEYWORDS

Painterly Portraits, Painterly Rendering, Expressive Depiction

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1 INTRODUCTION

Traditional portrait artists were masters of interpreting color values just by observing subjects with their eyes. They were able to obtain more effective impressions of skin than current high quality 3D rendered skins that are meticulously modeled and rendered including all extraneous physical details such as pores, veins and blemishes [Lawrence-Lightfoot and Davis 1997]. Therefore, there is a need for the development of simple processes for 3D rendering that can allow to obtain a wide variety of portrait painting styles.

Our conjecture in this paper is that painters create portraits by carefully observing a few illumination effects caused by the bidirectional scattering distribution function (BSDF) properties of skin [Bartell et al. 1981]. This observation is not really that difficult in practice. For instance, since specular reflection is view dependent, the only thing a painter should do is to move their heads slightly for separating specular effects from diffuse visually. Similar, approximate dark and bright color values of view independent illumination can easily be observed by moving light positions. This is specially important for skin since the values of shadows colors are not very low because of scattering.

