More Sketchy, More AR, More Fun!

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1 Introduction

Augmented Reality (AR) based entertainment applications are becoming more and more attractive and popular. A lot of effort has been put in improving AR interfaces, finding novel interaction techniques, but less work has been spent on improving the rendering quality. Is there a way to make AR installations more visually appealing and fun? Although a lot of computer games (including AR games/installations) still aim to create real-time, photorealistic rendered environments, there seems to be a new trend in the direction of making games stylistically more believable and/or more enjoyable. Consequently, non-photorealistic rendered (NPR) scenes are not only becoming more and more interesting for artists and game designers, but also for people who understand the content easier if the objects are rendered in a simple sketchy style. The aim is to create a world where augmented objects are expressive, clear and look aesthetically perfect. Furthermore, there are some unique advantages to using NPR techniques. For example hand-drawn sketches can often communicate complex object relationships in a better way than photorealistic pictures. We recognized that our approach was highly accepted by people, because viewer’s mind completed the overall picture and they liked the artistic pen-and-ink rendering method a lot.

In this sketch, we present sketchy-ar-us, a modified, real-time version of the Loose and Sketchy algorithm [Curtis 1999] in combination with an AR environment using programmable GPU hardware. Curti’s approach was mainly designed for offline renderings, thus it took 10-60 seconds for rendering each frame. In our AR environment, we achieve up to 11 fps including tracking, rendering, and object interaction. The algorithm does not depend on the complexity of geometry. The randomized appearance/disappearance of the silhouette guarantees highly dynamic animation and results in an attractive image.

2 Method and Results

Three steps have to be realized to achieve the Loose and Sketchy rendering result in real-time: calculating a sketched silhouette, blurring the image, and combining the image with a paper texture.

References