UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL
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A Converter for Physically-Based Renderer Scenes

Work presented in partial fulfillment
of the requirements for the degree of
Bachelor in Computer Science

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ABSTRACT

Este documento é um exemplo de como formatar documentos para o Instituto de Informática da UFRGS usando as classes LaTeX disponibilizadas pelo UTUG. Ao mesmo tempo, pode servir de consulta para comandos mais genéricos. *O texto do resumo não deve conter mais do que 500 palavras.*

Keywords: Formatação eletrônica de documentos. LaTeX. ABNT. UFRGS.

Using LaTeX to Prepare Documents at II/UFRGS

RESUMO

This document is an example on how to prepare documents at II/UFRGS using the LaTeX classes provided by the UTUG. At the same time, it may serve as a guide for general-purpose commands. *The text in the abstract should not contain more than 500 words.*

Palavras-chave: Electronic document preparation. LaTeX. ABNT. UFRGS.

LIST OF ABBREVIATIONS AND ACRONYMS

PBR Physically-based Rendering

PB Physically-based

CONTENTS

1 INTRODUCTION

Ever since the development of modern computer graphics, one of the goals aspired to by researchers was being able to synthesize images indistinguishable from real photographs. In order to produce a physically accurate image, the process of image synthesis - also called **rendering** - converts a description of a three-dimensional scene into an two-dimensional image. Rendering is a complex process that requires knowledge of optics, of material and object properties and of how light propagates in our world.

Over the years, physically-based rendering (PBR) has been incorporated and widely used in the entertainment and marketing industries. It has been used in movies and games as an outlet for expression and creativity, allowing artists to portray their vision more accurately. Today, most algorithms used in computer animation, geometric modeling and texturing require that their results be passed through some sort of rendering.

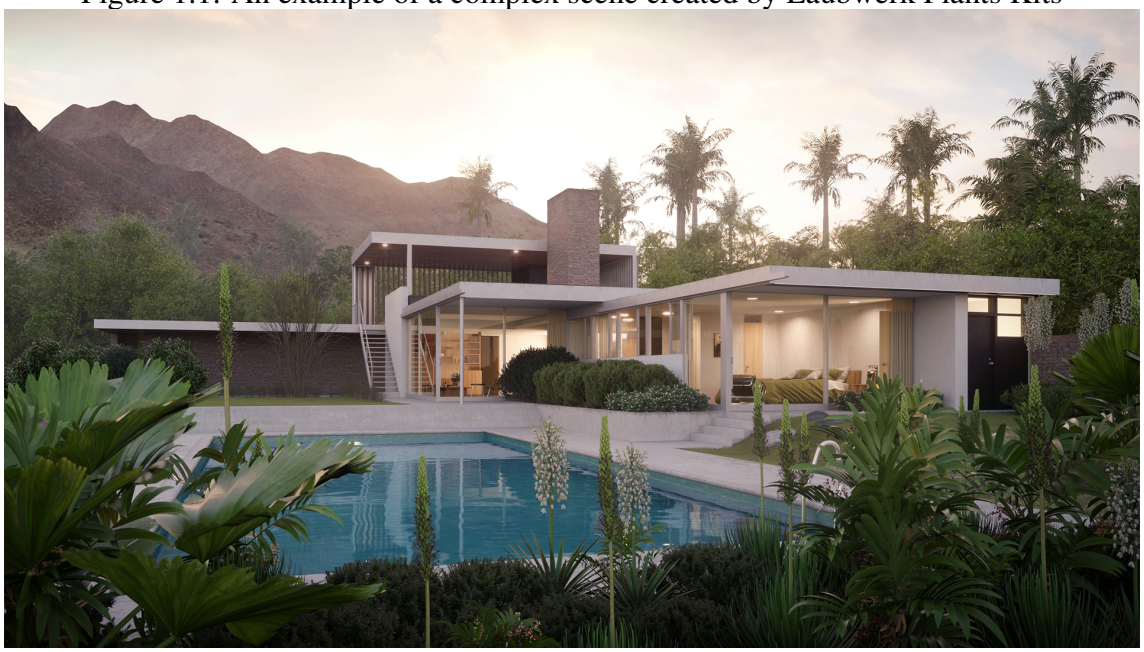
<STATE-OF-THE-ART RENDERERS>

The process of rendering an image usually starts with a scene. But what is a scene? In PBR, a scene is a collection of descriptions: of the scene's geometry (the objects), of the objects' materials and textures, of the light sources and of the rendering techniques the user would like to use to form the image. This description is then read and interpreted by the renderer, and the scene is then processed into an output image.

But even with the vast array of softwares at our disposal, modeling scenes is still a complex process. For instance, scenes created for architecture or design-oriented softwares often compile hundreds of 3D models and dozens of customized materials and textures, as shown in Figure 1.1. Each material and texture has to be carefully defined, taking into account the target renderer's limitations and particularities.

<CONVERTING A SCENE>

Figure 1.1: An example of a complex scene created by Laubwerk Plants Kits



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