

<<艺术化绘制的图形学原理与方法>>

图书基本信息

书名：<<艺术化绘制的图形学原理与方法>>

13位ISBN编号：9787308066006

10位ISBN编号：7308066002

出版时间：2010-1

出版时间：浙江大学出版社

作者：耿卫东

页数：359

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

<<艺术化绘制的图形学原理与方法>>

内容概要

The Algorithms and Principles of Non-photorealistic Graphics Artistic Rendering and Cartoon Animation provides a conceptual framework for and comprehensive and up-to-date coverage of research on non-photorealistic computer graphics including methodologies , algorithms and software tools dedicated to generating artistic and meaningful images and animations . This book mainly discusses how to create art from a blank canvas , how to convert the source images into pictures with the desired visual effects , how to generate artistic renditions from 3D models , how to synthesize expressive pictures from textual , graphical and pictorial data, and how to speed up the production of cartoon animation sequences with temporal coherence . It is intended for researchers and graduate students in the fields of computer graphics , digital media arts , and cartoon animation . Dr . Weidong Geng is a professor at the Department of Digital Media Technology and State Key Laboratory of Computer Aided Design and Computer Graphics , Zhejiang University , China .

书籍目录

1 Introduction1.1 The Brief History: from Photorealism to Non-photorealism1.2 What is Non-photorealistic Computer Graphics1.2.1 Image, Picture, and Visualization1.2.2 Photorealistic versus Non-photorealistic Rendering1.3 The Framework for Non-photorealistic Computer GraphicsReferences2 Simulating Artistic Media for Digitized Creation of Artworks2.1 Stroke-based Artistic Drawing2.1.1 Interactive Drawing Based on Brushstrokes2.1.2 Pen-and-ink Illustration by Stroke Textures2.1.3 Interactive Pencil Drawing2.1.4 Simulating Wax Crayons2.2 Oriental Calligraphy and Black Ink Painting2.2.1 Modeling of Soft Brushes2.2.2 Calligraphy with Soft Brushes2.2.3 Oriental Black Ink Painting2.3 Simulation of a Colored Painting2.3.1 The Computational Model of Rendering Colored Pigments2.3.2 Simulation of Watercolor Painting2.3.3 Simulation of Oil Painting2.4 Digitized Sculpting2.4.1 Digitized Wood Sculpting2.4.2 Digitized Metal Embossing2.5 Creation of Artwork in a Virtual Environment2.6 SummaryReferences3 Computer-aided Design of Art Patterns3.1 The Overview of Art Pattern Design3.2 Art Pattern Creation by Fractals3.3 Art Pattern Creation by Shape Grammars3.4 Layout-based Creation of Art Patterns3.4.1 Novel Layout Creation Based on Regular Structures3.4.2 Layout Creation Integrated with Fabrication Craft3.4.3 Art Pattern Creation by Stylized Layout3.5 Knowledge-based Creation of Art Patterns3.5.1 Aesthetical Knowledge Representation for ArtPattern Generation3.5.2 Generation of Art Patterns by Synthesis Reasoning3.6 SummaryReferences4 Artistic Painting by Reference Images4.1 Artistic Effect Generation by Pixel-level Image Processing4.1.1 Artistic Processing via Digital Half-toning4.1.2 Artistic Processing with Heuristic Rules4.2 Converting Images into Artistic Painting by Strokes4.2.1 Image-based Stippling Drawing4.2.2 Image-based Mosaic and Stained Glass Simulation4.2.3 Image-based Pen-and-ink Illustration4.2.4 Image-based Pencil Drawing4.2.5 Image-based Oriental Painting4.2.6 Image-based Colored Painting4.3 Artistic Transfer of Color and Texture from Reference Images4.3.1 Artistic Transfer of Color4.3.2 Artistic Transfer of Texture4.4 Image-based Painting Driven by Examples4.4.1 Painting Style Simulation by Image Analogy4.4.2 Artistic Painting Generation by Stroke Templates from Examples4.5 SummaryReferences5 Artistic Rendering for 3D Object5.1 Artistic Rendering Based on Traditional 3D RenderingPipeline5.1.1 Non-photorealistic Lighting Model5.1.2 Non-realistic Projection5.1.3 Non-photorealistic Texture Mapping and Synthesis5.2 Non-photorealistic Rendering with Interim Images5.2.1 Pen-and-ink Illustration from 3D Object5.2.2 Pencil Drawing from 3D Polygonal Object5.2.3 Chinese Painting from 3D Model5.2.4 Colorful Painting from 3D Model5.3 Artistic Silhouette and Line-drawing for 3D Model5.3.1 Silhouette Rendering from 3D Polygonal Object5.3.2 Line-drawing for 3D Surface5.4 Artistic Rendering for 3D Landscape5.4.1 Artistic Simulation by Placing Artistic Particles and Strokes on the 3D Surface5.4.2 Artistic Rendering of Plants Based on Their 3D Structure5.4.3 Artistic Rendition for Point-based Models5.5 Artistic Illustration of Volume-based Models5.5.1 Artistic Rendering of Surface Features of Volume Model5.5.2 Artistic Illustration of Internal Structure of Volume Model5.6 SummaryReferences6 Expressive Rendering6.1 Comprehensible Rendering6.1.1 Enhancement of Rendering by Emphasis of Visual Cues6.1.2 Cutaway Illustration6.1.3 Comprehensive Rendering via Composite Viewpoints6.2 Shape-conveying Illustrations6.2.1 Expressing Shape Features via Stroke Texture6.2.2 Expressing Shape Features by Selective Depiction6.3 Intent-based 3D Illustration6.3.1 Intent Communication by Multimedia Presentation6.3.2 Interpreting Intent by Graphical Abstraction6.3.3 Visual Explanation of Iconic Symbols6.4 Expressive Rendering for Transparency6.5 SummaryReferences7 Computer-assisted Cartoon Animation by Traditional Production Pipeline7.1 The Traditional Animation Process7.2 The Role of the Computer in Traditional 2D Animation7.3 Computer-assisted Coloring7.3.1 Auto-coloring of Inbetweening Frames7.3.2 Colorizing Black-and-white Cartoons7.4 Computer-assisted Inbetweening7.4.1 Generation of Inbetween Poses7.4.2 Generation of inbetweening Facial Expression7.5 SummaryReferences8 Novel Approaches to Computer-assisted Cartoon Animation8.1 Video Driven Cartoon Animation8.1.1 Directly Converting Video Segment into Painterly Animation8.1.2 Contour-based Animation Generation from Video8.1.3 Video-driven Facial Animation with Style8.2 Cartoon Production Integrated with 3D Geometric Elements8.2.1 Automated inbetweening by the 3D Approximate Model8.2.2 Cartoon Animation by 3D Canvas8.2.3 Cartoon Animation by View-dependent

Geometry8.3 Cartoon Generation by Temporal Coherent Rendering8.4 Cartoon Generation Together with 3D Graphical Processing Techniques8.4.1 Cartoon Production Integrated with 3D Transformation8.4.2 Cartoon Animation Enhanced with Artistic Texture Mapping8.4.3 Cartoon Motions Augmented by 3D Physical Models.8.4.4 Stylized Highlight and Shadow Generation for Cartoon Animation8.5 Cartoon Production via Reuse of Traditional Animation8.5.1 Reusing Visual Style for Cartoon Animation8.5.2 Reusing Motions for Cartoon Animation8.6 SummaryReferences9 Perspectives of Non-photorealistic Computer GraphicsReferencesIndex

章节摘录

Non-photorealistic computer graphics is a multidisciplinary field in the research community, involving computer arts , computer graphics , computer vision , digital image / video processing and visual cognitive psychology . It aims at the computer generation of images and animations that are made in part “ by hand ” in appearance , and are characterized by their use of randomness , abstraction , ambiguity, or arbitrariness rather than completeness and adherence to the portrayed objects ’ properties . In essence , it mimics the eyes and minds of artists and designers to create , view and depict the graphics world , effectively carrying-out the visual communication between computers and human beings .

Coverage and Audience This book mainly focuses on the following five core issues in non-photorealistic computer graphics .

- (1) How to create the paintings , artworks or sculptures from a digitized blank canvas or a standard shape with the tools simulated by the computer .
- (2) How to convert a series of reference images into the resultant depiction with the desired visual effect .
- (3) How to automatically generate the artistic rendition or technical illustrations from the 3D models in terms of the stylized parameters .
- (4) How to produce the comprehensive and expressive visualizations from a set of graphical and textual information on the basis of the semantic meanings to be conveyed .
- (5) How to speed up the production of cartoon animation by computer- assisted refinement of traditional pipeline and the exploration of novel approaches .

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>