

# PIXAR

## Uma breve introdução

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## Luxo Jr.

- Primeiro curta da Pixar: 1986
- Algoritmo de Iluminação Local
- *How about shadows??*



Computer Graphics, Volume 21, Number 4, July 1987

**Rendering Antialiased Shadows with Depth Maps**

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Palo Alto, CA

**ABSTRACT**

We present a solution to the aliasing problem for shadow algorithms that use depth maps. The solution is based on a new filtering technique called percentage closer filtering. In addition to antialiasing, the improved algorithm provides soft shadow boundaries that meet the requirements of the new algorithm for depth, distance, and the effects of perspective, and distance to perspective.

**CC Categories and Subject Descriptors:** I.3.3 [Computer Graphics]: Picture/Image Generation - Display Algorithms; I.3.7 [Computer Graphics]: Three-Dimensional Graphics and Realism - Color, shading, shading, and texture

**General Terms:** Algorithms, Performance Analysis

**Key Words:** shadows, depth maps, antialiasing, percentage closer filtering

**1. Introduction**

Shadows enhance the images synthesized by computer graphics. Although many algorithms for rendering shadows have been published, none have been widely accepted as a standard means of producing realistic shadows. The most commonly used algorithm, Ray (Shade) [Sh86], has provided a means for rendering shadows in the shading, perspective, and distance domains. Other algorithms [Sh86] produce realistic shadows and are easy to implement. However, they require the user to specify the position, color, and distance of each light source. The user must also specify the position, color, and distance of each object. The user must also specify the position, color, and distance of each object. The user must also specify the position, color, and distance of each object.

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## Shadow Maps

Computer Graphics, Volume 21, Number 4, July 1987




Figure 12. Scene from Lauer Jr.




Figure 13. Shadow maps from Lauer Jr.





Figure 14. Ray's Desk

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Paper no Siggraph em 1987

# Histórico

- **Criada oficialmente em dezembro 1985**
  - Steve Jobs compra por US\$10 milhões a Lucasfilm de George Lucas
- **1991: parceria com a Disney para produção de 3 filmes de animação**
- **1997: reformula a parceria para fazer 5 filmes**
- **Maior de 2006 tornou-se uma subsidiária da Disney**



## Pessoas



- **Edwin Catmull**: Presidente
- Loren Carpenter: Senior Scientist
- Rob Cook: vice presidente de engenharia de software
- **John Lasseter**: Chief creative officer



## Nomes que fizeram (e ainda fazem!) a história de CG...

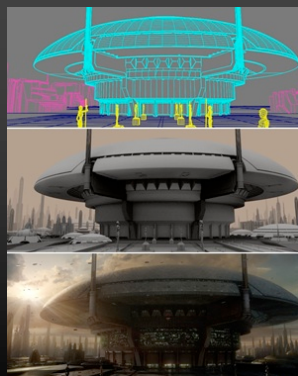
- Alvy Ray Smith
- Thomas Porter
- W. Reeves
- Tom Duff
- Michael Kass
- Tony DeRose
- David Baraff
- Andrew Witkin

## Oscar técnicos



- **1996**
  - John Lasseter: Oscar especial pelo desenvolvimento de Toy Story
  - E. Catmull, A.R. Smith, T. Porter, T. Duff: Oscar (scientific and engineering) por Composição de Imagens Digitais
- **1997**
  - W. Reeves ganha o Oscar (scientific and engineering) pelo trabalho em Sistemas de Partículas
- **2001**
  - Ed Catmull, Loren Carpenter e Rob Cook recebem um Oscar por "avanços significativos para a área de rendering para filmes exemplificado pelo RenderMan
- **2006**
  - Ed Catmull e Tony DeRose: Oscar de Excelência Técnica pelas Superfícies de Subdivisão
  - David Baraff, M. Kass e A. Witkin: Oscar de Ciência e Engenharia pelo trabalho em Simulação de Tecidos

## RenderMan



- Lançado em 1989
- RenderMan é uma especificação para softwares de modelagem e animação enviar dados para renderização, independentemente de dispositivo
- Equivalente 3D a Postscript

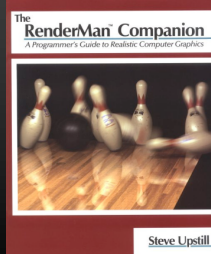
## RenderMan

- Pixar's Photorealistic RenderMan (PRMan) é um produto da PIXAR que implementa a especificação
- RenderMan para Maya
- BMRT - Blue Moon Rendering Tools



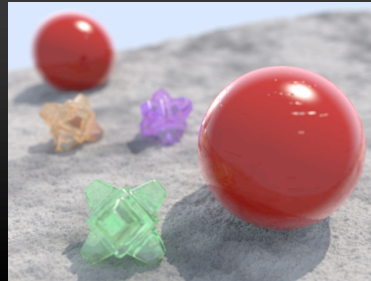
## RenderMan

- Bibliografia
- [www.renderman.org](http://www.renderman.org)



## Gelato

- **Evolução do BMRT**
- **Produto da NVIDIA**
- [http://www.nvidia.com/page/gz\\_home.html](http://www.nvidia.com/page/gz_home.html)



## Filmes longa metragens

- **Toy Story: 1995**
  - Filme que mais faturou em 1995: US\$ 362 milhões
  - Considerado o primeiro longa inteiramente feito em CG
- **Vida de Inseto: 1998**
- **Toy Story 2: 1999**
- **Monstros S.A.: 2001**





## Empregos?

*“In general, at Pixar we look for broad artistic and technical skills, rather than ability to run one package or another. We concentrate on finding people with breadth, depth, communication skills and the ability to collaborate. If you have those attributes, we can teach you the tools.”*

## Mais Informações

- <http://graphics.pixar.com>  
Biblioteca online dos papers técnicos
- [www.renderman.org](http://www.renderman.org)



# Curtas

- Luxo Jr: 1986
- Red's Dream: 1987
- Tin Toy: 1988 → 
- Knick Knack: 1989
- Geri's Game: 1997 → 
- For the Birds: 2000 → 
- Boundin: 2004
- One Man Band: 2006

