Pontifícia Universidade Católica
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Edirlei Everson Soares de Lima

Video-Based Interactive Storytelling

TESE DE DOUTORADO

DEPARTAMENTO DE INFORMÁTICA
Programa de Pós-Graduação em Informática

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Thesis presented to the Programa de Pós-Graduação em Informática of the Departamento de Informática, PUC-Rio as partial fulfillment of the requirements for the degree of Doutor em Informática

Advisor: Prof. Bruno Feijó

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Abstract

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The generation of engaging visual representations for interactive storytelling represents a key challenge for the evolution and popularization of interactive narratives. Usually, interactive storytelling systems adopt computer graphics to represent the virtual story worlds, which facilitates the dynamic generation of visual content. Although animation is a powerful storytelling medium, live-action films still attract more attention from the general public. In addition, despite the recent progress in graphics rendering and the wide-scale acceptance of 3D animation in films, the visual quality of video is still far superior to that of real-time generated computer graphics. In the present thesis, we propose a new approach to create more engaging interactive narratives, denominated “Video-Based Interactive Storytelling”, where characters and virtual environments are replaced by real actors and settings, without losing the logical structure of the narrative. This work presents a general model for interactive storytelling systems that are based on video, including the authorial aspects of the production phases, and the technical aspects of the algorithms responsible for the real-time generation of interactive narratives using video compositing techniques.

Keywords

Interactive Storytelling; Video-Based Dramatization; Video Compositing; Virtual Cinematography.

Resumo

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A geração de representações visuais envolventes para storytelling interativo é um dos desafios-chave para a evolução e popularização das narrativas interativas. Usualmente, sistemas de storytelling interativo utilizam computação gráfica para representar os mundos virtuais das histórias, o que facilita a geração dinâmica de conteúdos visuais. Embora animação tridimensional seja um poderoso meio para contar histórias, filmes com atores reais continuam atraindo mais atenção do público em geral. Além disso, apesar dos recentes progressos em renderização gráfica e da ampla aceitação de animação 3D em filmes, a qualidade visual do vídeo continua sendo muito superior aos gráficos gerados computacionalmente em tempo real. Na presente tese propomos uma nova abordagem para criar narrativas interativas mais envolventes, denominada “Storytelling Interativo Baseado em Vídeo”, onde os personagens e ambientes virtuais são substituídos por atores e cenários reais, sem perder a estrutura lógica da narrativa. Este trabalho apresenta um modelo geral para sistemas de storytelling interativo baseados em vídeo, incluindo os aspectos autorais das fases de produção e os aspectos técnicos dos algoritmos responsáveis pela geração em tempo real de narrativas interativas usando técnicas de composição de vídeo.

Palavras-chave

Storytelling Interativo; Dramatização Baseada em Vídeo; Composição de Vídeo; Cinematografia Virtual.

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