
Designing Digital Puppetry Systems: Guidelines and Best Practices

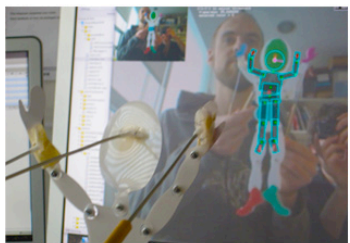


Figure 1. Example real-time puppetry systems from top: portable green-screen, tracking with computer vision, and segmentation with the Kinect depth camera.

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Abstract

This instructive video presents guidelines and best practices for designers of digital puppetry systems by demonstrating four common setups and illustrating the benefits and limitations of each approach. Practical suggestions and humorous examples of green-screening techniques, digital composition, using rod puppets and using a Kinect camera are included to illustrate the possibilities and pitfalls of real-time animation for HCI designers interested in using computer vision to support creative expression with physical objects.

Author Keywords

Digital Puppetry; Computer Vision; Augmented Virtuality; Mixed Reality; Human Computer Interaction; Interaction Design for Children

ACM Classification Keywords

H.5.2 [Information Interfaces and Presentation]: User Interfaces, Interaction Styles; H.5.1 [Information Interfaces and Presentation]: Multimedia Information Systems, Animation; I.4.9 [Image Processing and Computer Vision]: Applications;

Description of Techniques and Approach

The techniques of animating digital characters with traditional animation systems requires intensive labor, time and expertise and are often not intuitive for children or beginners. Many hybrid technologies for experts such as motion tracking systems have been designed for industry but few options are available to the general public. We present a series of digital puppetry systems that provide a low cost and potentially expressive means of real-time animation for a general audience. Due to the inherently visual nature of these systems we present guidelines and examples in a video format for software designers, HCI researchers and DIY audiences which demonstrate a portable green-screen, a laptop theatre, puppet tracking and mapping techniques, and real-time puppetry using the Kinect camera. Each system has advantages and disadvantages depending on the experience of the user, the aesthetics of the digital system, and the affordances of the physical objects and puppets the system attempts to support.

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