Reality-Based Animation Interfaces

1. Aims

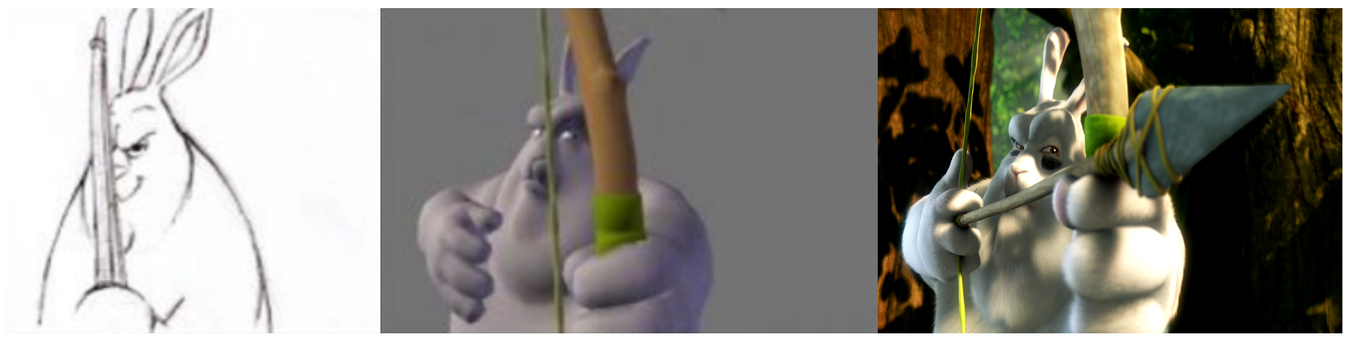


Fig. 1: A single frame from Big Buck Bunny (2008) as it appears in each stage of the animation pipeline. From left to right: storyboard sketch, lo-fi animation and final production frame.

Develop two alternative interfaces tailored for low-fidelity animation (fig 1).

Confirm accessibility of virtual reality (VR) interface for untrained users

Benchmark usability and explore usage barriers for tangible interface

2. Implementations

Both interfaces were developed through an iterative process of prototyping and expert interview

Realized via a fully-occluding VR headset (Oculus Rift DK2).

Users select objects via head-tracking and control the system with a gamepad.

Fig. 2.1: Colleague poses with Oculus and gamepad setup.

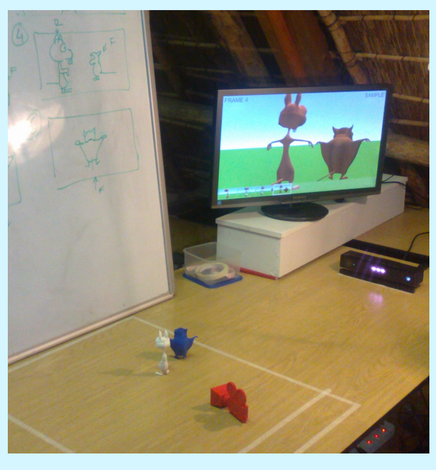


Fig. 2.2: Tangible system in use.

Uses a depth sensor (Kinect for Xbox One) to detect the user's arrangement of 3D-printed camera and characters, and converts it to a virtual 3D scene.

3. Methods

Three heuristic experts engaged in free exploration of the system. Qualitative evaluation was performed through think-aloud assessment, open ended questions and filling out the system usability scale (SUS).

20 animation professionals created 3D scenes from a storyboard (fig. 2.2).

They then completed the SUS followed by a diagnostic questionnaire and interview.

4. Results

Object selection by head-tracking and translation via the gamepad were identified as easiest aspects of the interface.

However, evaluators expected camera control via both gamepad and headset.

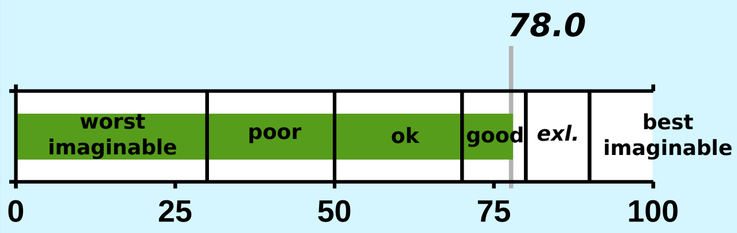


Fig. 4.1: System was bench-marked at SUS score of 78.0, placing it in the category "good", and at the 82nd percentile of all systems surveyed in Sauro [2011].

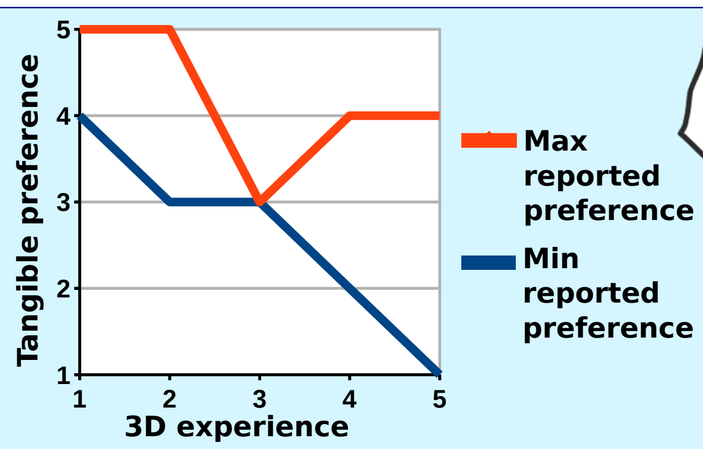
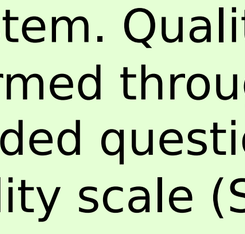


Fig. 4.2: Those with less 3D experience reliably preferred a tangible interface. Experienced users cited model inflexibility and lack of fine-grained control as barriers.



5. Conclusions

VR allows users to better understand 3D spatial relationships. This shows promise for previz applications once usability issues are resolved.

Tangible interfaces are highly usable, especially for those with little 3D experience. However, more flexible models and finer-grained control are required for mainstream industry adoption.

http://people.cs.uct.ac.za/~previz2015/
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References: Jeff Sauro. 2011. *A practical guide to the system usability scale.*