

BurnAR: Feel the Heat

³Matt Swoboda, ^{1,2}Thanh Nguyen, ¹Ulrich Eck, ²Gerhard Reitmayr, ²Stefan Hauswiesner, ²Rene Ranftl, ¹Christian Sandor*

¹Magic Vision Lab
University of South Australia

²Institute for Computergraphics and Vision
Graz University of Technology

³Fairlight

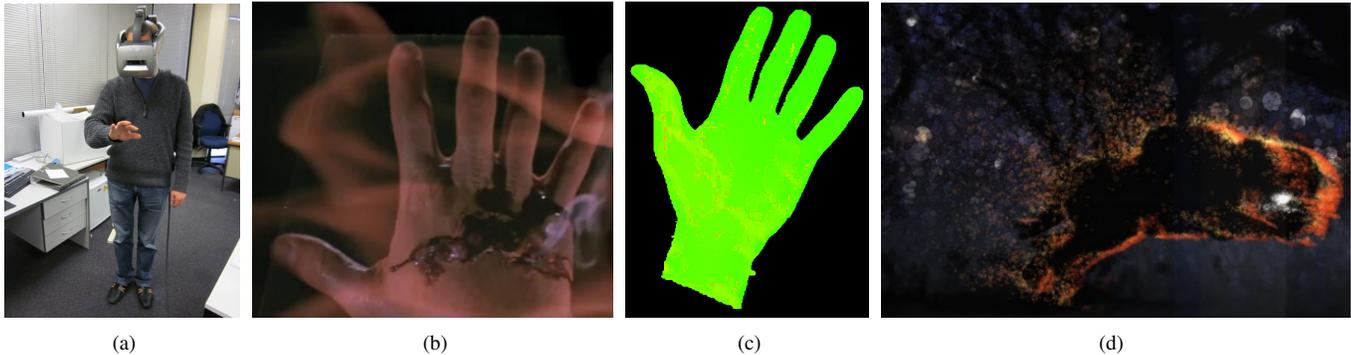


Figure 1: A user with a head-worn display (HWD, a) can experience how his hand is virtually set on fire (b). Based on images acquired through the HWD's cameras, we perform a reconstruction of the user's hands (c). For realistic smoke effects, we use Fairlight's Demolition Engine (d).

ABSTRACT

In this demo, a user will experience their own hands interacting with complex graphics simulating smoke and fire effects in the environment. A user will look through a stereo head-worn display (HWD) at their own hands which will start to smoke and interact with flames. A real-time fluid simulation running calculates the volumetric effects using the user's hand as input for motion and interaction surface. The hands' location and depth will be estimated from the stereo view delivered by the HWD's camera pair. Overall, the immersive experience of the user's own body interacting with the striking, high-quality graphics effects will create an exciting demo.

1 DEMO DESCRIPTION

What makes it unique and special? Overall, this demo enables users to experience a viscerally very shocking effect: seeing their own hands burn, inspired by a scene from the movie *Dune* (see Figure 1 (b)¹). The demo will be presented using a unique HWD with a high degree of immersion: Canon's VH-2007.

Another unique point about our demo are the amazing graphics. We employ Fairlight's award-winning² Demolition Engine³. It features cutting-edge particle physics, fluid dynamics, lighting, compositing and volume rendering—all calculated on the GPU.

Why will it draw a crowd? Our demo enables users to experience a unique installation as described above. It is very easy to use and the effect is immediate. The user's view will be shown on

*e-mail:christian@sandor.com

¹from <http://www.youtube.com/watch?v=kJsYKhEV6o0>

²[http://en.wikipedia.org/wiki/Fairlight_\(group\)](http://en.wikipedia.org/wiki/Fairlight_(group))

³<http://directtovideo.wordpress.com>

a huge projection next to the demo; passing observers can easily understand what's happening.

Would an AR expert want to see it and why? The level of immersion that our HWD provides by itself is already very interesting and has not been experienced widely in the ISMAR community. Furthermore, the level of computer graphics in most AR research systems is no match for DemolitionEngine. We think that a crucially missing point for the wider acceptance of AR systems is the relatively simplistic graphics that have been presented so far. Therefore, we believe that our demo addresses a crucial issue for AR research as a whole.

2 DEMONSTRATION SPACE REQUIREMENTS

- *The amount of floor or desktop space needed*
 - Floor space: 3m x 3m
 - Desktop space: one table (1m x 2m) and one chair
- *The list of equipment you will bring (as detailed as possible)*
 - Canon vh2007 hmd + controller
 - Workstation + monitor
 - Projector + dvi splitter
 - Cables, mouse, keyboard
- *Any power, socket and outlet needs*
 - 3x power outlet
 - total power consumption 1-1.5 kw
- *Networking requirements* One ethernet port with unrestricted internet access (all ports open in/out).
- *Environment requirements*
 - Please provide one table (1m x 2m) and one chair
 - We need space for projecting a video with a standard projector. Ideally, a white wall segment (1m x 2m) would be adjacent to the demo space.
 - Illumination of the demo space should be as diffuse as possible. No bright light. No daylight. No spotlights.