



Figure 1. A normal illumination causes wrong occlusion effects between real objects and virtual overlays (left). Creating an occlusion shadow underneath the overlay prevents the light from being diffused on the real object's surface and transmitted through the optical combiner and the graphics (center). Overlaying the graphics over the shadow results in a realistic occlusion of the real object by the virtual one (left)<sup>7</sup>.



Figure 3. Knowing the depth information of the real content, also allows the occlusion of the virtual objects by the real ones (left). Combining this with our occlusion shadow method (center) creates correct mutual occlusion effects between both environments (right).



Figure 7. This example demonstrates our method in combination with a more complex real scene: A physical skull of a mid-cretaceous dinosaur (a Deinonychus) has been augmented with virtual muscles and bones (left) – generating occlusion shadows exactly underneath the virtual overlays. Covering the skull by a virtual skin (right) leaves most of the bone

structure in shadow. Only the real teeth are clearly visible.