

Holographic Wearable Display for Manual Assembly Support (HORUS)

Final Presentation Abstract

The wearable display technologies for augmented reality are being developed very rapidly in the last years (HoloLens, Magic Leap, Metavision to name a few brands). They find multiple applications from professional ones through education, to pure entertainment. The current technologies has few significant limits (i.e. field of view, brightness of the augmented image or its fixed focal distance) decreasing the user experience of the augmenting content. Recent advancements in computer generated holography could be a reliable solution for at least some of the limitations. The primary goal of the presented project was to develop a technology demonstrator of wearable display utilizing holographic technology, equipped with sensors for full augmented reality experience and with primary application of interactive support for manual assembly procedures.

The developed optical system allows to display multiple images at variable focal distances independent for each of the images, which allows for much more natural reception of the augmented reality. When combined the depth sensor it is possible to display images at distances user is supposed to focus eyesight at. This is the very unique feature over the existing commercial near-eye displays as it doesn't utilize stereography for achieving the 3D effect. Additionally it may work even in outdoor environment as well, without experiencing image quality degradation.



Figure 1 Experimental display setup