Augment Your Reality

According to Gartner, enhancing the “ambient user experience” that seamlessly blends a person’s physical, virtual, and electronic environments will be one of the top 10 strategic technology trends in 2016. Augmented reality (AR) is a key component of this immersive user experience, and it is clear from the number of new product announcements in diverse application areas that this is a hot topic across many industries.

Microsoft HoloLens

First announced about a year ago, the HoloLens is an AR headset that will start shipping to developers in the US and Canada during the first quarter of 2016. This fully untethered holographic computer allows the viewer to move freely, interacting with both the real world and holographic projections (see Figure 1). According to Microsoft, the system has more power than the average laptop and uses an inner headband to distribute the weight of the unit around the user’s head rather than balancing it on the bridge of the nose. The system is passively cooled without fans, and Microsoft coined the term holographic processing unit (HPU) to refer to the processor that takes input from the various system sensors and produces the appropriate low-latency images that are displayed on the see-through holographic high-definition lenses.

With the HoloLens, interaction occurs through voice controls, gaze tracking, and custom gestures. Although promotional material shows holographic content that appears to span the full field of view, in reality the field of view is limited and the immersive experience can be disrupted when holographic objects disappear as they move into the periphery.

Currently, these units are $3,000 each, pricing them out of the commodity gaming market, but within reach for some manufacturing, scientific, and retail applications. Microsoft has partnered with Trimble to improve communication and efficiency in the construction industry, with the Cleveland Clinic to enhance education for medical students, with NASA to allow scientists on Earth to better control rovers on Mars, and with Volvo to allow customers to visualize all the available vehicle options and features.

For more information, visit www.microsoft.com/microsoft-hololens/en-us.

Hyundai Virtual Guide

In late 2015, Hyundai became the first mainstream automobile manufacturer to releases its owner’s manual as an AR app. Vehicle owners will no longer need to dig out and flip through a paper manual to figure out the meaning of an indicator light. Instead, they can simply point their phone or tablet’s camera at the dashboard, and the virtual guide’s 2D and 3D tracking technology will display an overlay image providing information about various vehicle components (see Figure 2). In addition to these overlay images, the app also contains 82 how to videos and 50 informational guides covering key vehicle components, including engine oil, air filter, fuse box, and brake fluid.

The Hyundai app is available for free in the Apple App store and on Google Play, although currently only for the 2015 Sonata model. Hyundai plans to support more vehicle models soon. For more information, visit www.hyundai.com/us/en/pressreleases/44450.
MINI Augmented Vision
At the Auto Shanghai show, MINI revealed its vision of the future for drivers. Instead of an app running on a smartphone or tablet, the auto manufacturer demonstrated a prototype version of its MINI Augmented Vision eyewear, developed in collaboration with Qualcomm and Osterhout Design Group. Aimed at improving the driving experience, the AR glasses project useful information into the driver’s field of view without obscuring the driver’s view of other vehicles or pedestrians on the road. In fact, these AR glasses can provide a type of x-ray vision, using the vehicle’s various cameras and sensors to allow the driver to see potential hazards through the body of the vehicle (see Figure 3). The AR glasses provide navigational aids, such as current speed and posted road speed, and can help drivers locate an available parking spot.

The auto manufacturer speculates that drivers will wear the MINI augmented vision glasses all the time, so it has included navigation on the device to lead owners back to their parked vehicles. This prototype is still in the early development stages, and a product launch date has not yet been announced. For more information, visit http://miniusanews.com/newsrelease.do?id=760&mid=1.

Universe2Go
Several star map apps exist that allow users to point their smartphone or tablet camera at the sky and view an image on the screen augmented with the names of known celestial objects. However, it can be difficult to understand the true placement of these objects in the night sky due to the grainy images obtained by cameras in such low-light conditions. The German company nimax has solved this problem with the introduction of its Universe2Go product and app (see Figure 4). This AR headset uses a smartphone (placed in the top of the unit with its screen facing down) to project an image onto a mirror. The mirror bounces the image back up where it reflects off an angled piece of clear plastic into the viewer’s eyes. Thus, the viewer looks through the headset at the actual night sky, which is then augmented with celestial information. The Universe2Go app also includes an audio guide with facts about constellations, stars, planets, and satellites as well as stories from Greek mythology. Because the smartphone’s touchscreen is inaccessible while it is mounted in the headset, the app’s various modes and menus can be selected using head movements.

Universe2Go is available for $99 and includes free shipping worldwide. For more information, visit http://universe2go.com/en/.

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