

HALLOWEEN



PROJECT RESEARCH

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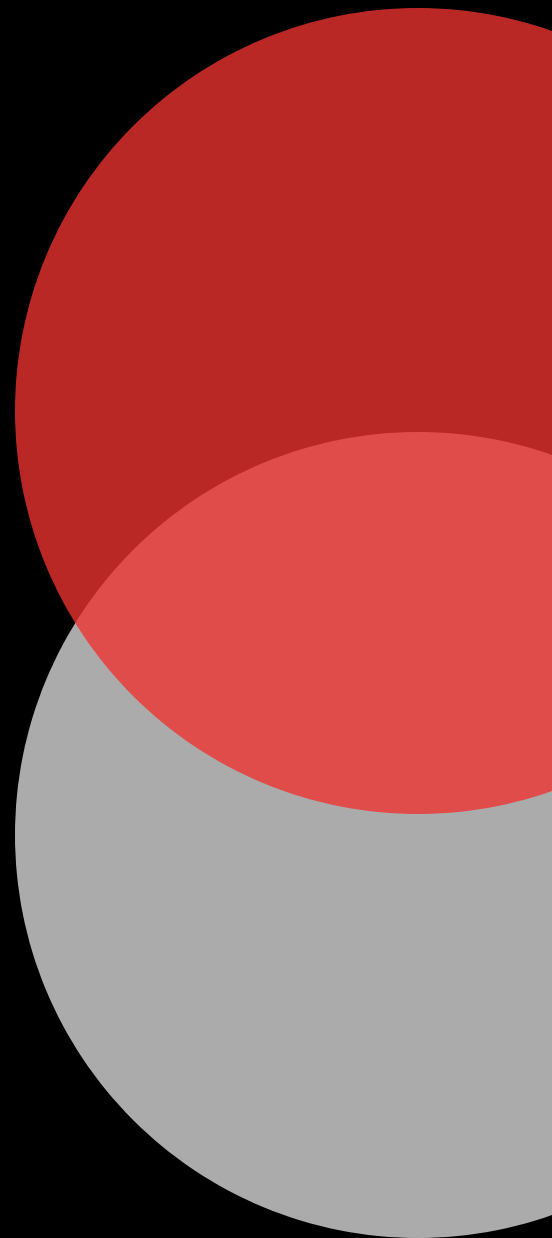
Background

The Microsoft HoloLens is a mixed reality headset that allows users to interact visually with their native environment. It was released in March of 2016. Currently, it is in the developmental stage, but a consumerized version will be available at some time in the unknown future. According to The Verge, a tech and media news network, Microsoft is rumored to be releasing a HoloLens 2 that will be more lightweight, have a larger field of vision and will hopefully have a more palatable price tag.

Detailed Explanation

There are some specifications to the device, many of which help to make the HoloLens unique. The Microsoft HoloLens has a great optics, sensors, and human understanding. It has 2 HD 16:9 light engines, automatic pupillary distance calibration and 2.3 million light points. It includes 4 environment understanding cameras, 4 microphones, and 1 ambient light sensor. It can understand spatial sound, gesture input, voice, and can track the users gaze. The HoloLens has built in speakers, buttons to control the volume, and bluetooth.

The battery time on the HoloLens, right now, is kind of low, allowing only 2-3 hours of active use, but what's great about it is that it is passively cooled - meaning that it has no fans. But what's more is that it has 64GB Flash and 2GB RAM memory.



Development

There are certain tools that Microsoft recommends for building in the HoloLens. To build mixed reality apps without a HoloLens present, they recommend using and installing the HoloLens Emulator. Once that's complete, they also recommend using the Windows Mixed Reality Simulator to test the mixed reality apps for these immersive headsets. In addition, Microsoft recommends that the easiest way to get started building/ creating apps for the HoloLens is to use the Unity game engine.

Expanding on the Emulator which will be used for presentations:

The emulator allows you to run holographic apps in a virtual machine without a physical HoloLens. It includes a virtual HoloLens image that runs the latest version of the Windows Holographic OS. It can be used for presentation purposes.



Known Issues Related to HoloLens:

The biggest issue associated with this technology is it's has an extremely narrow field of vision. In addition, most of the objects displayed in the hololens appears at a fixed or certain optical distance. Usually, the person has to be about 2 meters away from the object that will appear in the hololens. This creates trouble for certain games that are developed. Additionally, although it has a built in camera, the hololens will only allow you to take a recording for a brief period of time- this time being 3 minutes max. What's more is that after 2 minutes of recording, the resolution and quality of the video will drop. Another issue with the hololens is that the battery time is not that long. It will usually only last about 2 hours before it needs to be recharged.

Commercial Use

According to the Business Report, these are the companies that are already using the HoloLens & what for:

- **Thyssenkrup:** This is an elevator company and their maintenance crew uses the HoloLens to contact other technicians for support. The other staff relays data, other information directly to the crew. According to the company, this makes maintenance four times faster than before.
- **Stryker:** This is a medical technology company that has been using the HoloLens to visualize how operating rooms are configured and makes alterations without moving the equipment around.
- **Ford:** Designers use it to see how different parts would change the look of a car.

Future of HoloLens:

This technology really has the power to change the game. In the future, it can really help people to interact with 3D content on a whole new level. Designers, architects and engineers will be able to use the HoloLens to interact with 3D renderings of their schematics and designs, allowing them to manipulate the object in real time and make alterations (Business News Daily). In addition, companies has listed these things as their hopes for the future of HoloLens. Some they have already seen happening and some, they are wishful for in the near future. NOTE: All of these examples have come from a news report from Business News Daily:

- **Field service assistance:** Workers out in the field, doing repairs and maintenance, can use the HoloLens to connect with a remote expert to assist them with specific problems.
- **Training:** Live or programmed training can walk employees through operating equipment and provide other lessons, with interactive tutorials.
- **Real-time data readouts:** The augmented reality technology in the HoloLens gives employees analytics on specific objects that are connected to network-giving them the data they need for their job instantly.

Inspiration

In relation to our product, one of the things that led our thinking was the Oculus VR headset. While there are obvious differences between the two, it was the piece of technology that we were most familiar with and could connect to the HoloLens development. We also took a look into the Microsoft App Store and looked at the products that were already developed. For one, we wanted to make sure that we were going to be creating something new and original, as we didn't want to create something that was already out there. Secondly, since using the HoloLens (and the product itself) was relatively new to all of us, we wanted to get a feel of just what is possible in the HoloLens.

Since we are in such unfamiliar territory, we first had to find out what was even out there already. As you can imagine, the majority of the applications so far are educational based. Some more practical uses highlighted on the Microsoft site such as construction, architecture, etc. From there, we move into games and visual simulations like seeing the stars or the inside of the human body. We wanted to see the scope of what could be created and through that, we were eventually able to come up with our own idea.

