

MICROSOFT HOLOLENS RESEARCH DOC

New Media Capstone [NMIX 4510]

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PRIMER

[The Microsoft HoloLens](#) is a new mixed reality platform which pretty much means a [holographic computer](#) built into a headset that allows you to “engage with your digital content and interact with holograms in the world around you.” The device uses multiple sensors to track your environment and place holograms in relation to the things around you, as well as built-in speakers that provide spatial sound, so a sound always sounds like it’s coming from the same place, even when you turn your head. The headset is completely wire-free, allowing you to move around without constraints, so the world is yours to explore.

RESEARCH

TRYING OUT THE TECHNOLOGY

We (and everyone else in the NMI) knew nothing about this technology upon receiving our assignment, so we did what trailblazers do: we tried it out.

Each member of our group tested out the HoloLens and explored the real and virtual worlds around us. This helped us get into the right frame of mind. Trying on the technology helped us understand what *exactly* you can do with the HoloLens. We learned about the clicking and selecting motions, we experimented with The Gaze, we put *fish on tables*. Emily loved learning the gestures, David loved placing holograms all over the room, and Alyssa loved the whole thing so much she took it home.

OTHER APPS

We also explored existing HoloLens apps such as “[SketchAR](#)” and “[HoloAnatomy](#)” which helped us understand how to best utilize the HoloLens’ capabilities as a mixed reality platform. SketchAR is unique in that the user can draw on a wall and, because the HoloLens senses and reacts to the users positioning, when you move around, you can see your drawing from different angles. Imagine using the HoloLens to paint a mural! HoloAnatomy was also an important app to look at because the holographic images are so interactive; the user can explore the anatomy of a body right in front of them minus the mess of a true dissection. This app is even better than cutting into a cadaver though because the holographic images allow the user to see how parts of the body are layer, for example how the cardiovascular system is overlaid through the muscular system. Futuristic stuff.

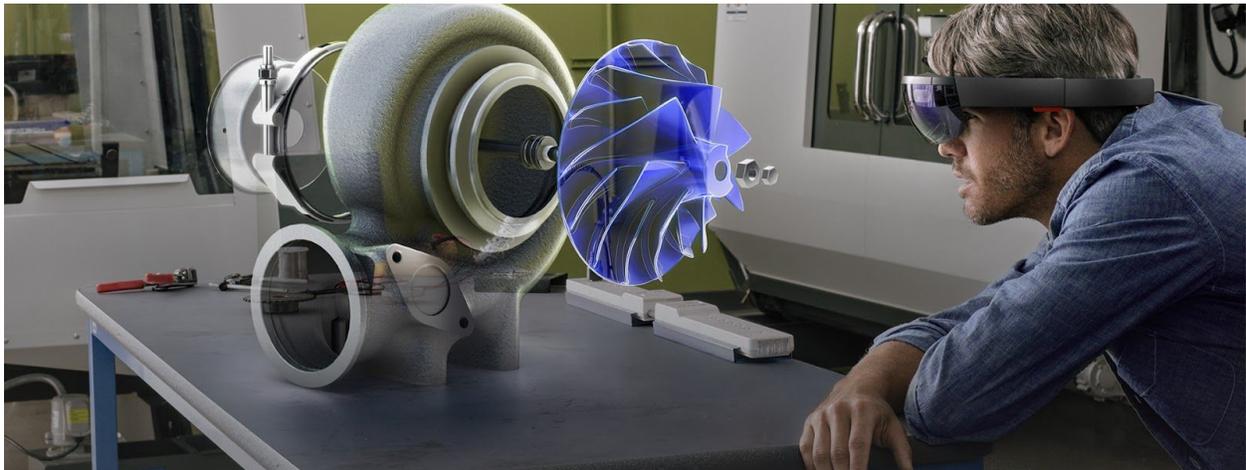
DEVELOPING: CODING LANGUAGES, SOFTWARE DOWNLOADS, ETC.

Second to coming up with our idea, learning how to develop for the HoloLens is the biggest obstacle our team has faced. In order to begin, we needed to know what software to download. We checked out Microsoft’s [Installation checklist for HoloLens](#) which told us which versions of Visual Studio and Unity to download. However, our lead developer, David, wasn’t able to download Visual Studio 2017 without having Windows 10 installed on his laptop. Purchasing Windows 10 would’ve been a \$200 upgrade which just wasn’t in the budget. Luckily, the NMI has a Surface Studio which, on top of being really fancy, sparkly, and new, was also the perfect venue for developing a Microsoft product.

Developing for the HoloLens requires learning [C](#), a language that we aren't very familiar with. We know our HTML and CSS, but when it comes to this new language, we've had to check out quite a few [lynda tutorials](#) to gain a better understanding of how it works.

WHAT WE KNEW WE WANTED

We knew we wanted to create a technology that utilized the HoloLens' capabilities to its fullest. In other words we wanted to create an app that could project holographic images that were significant to the space in which they were appearing.



This was the hallmark trait of really cool HoloLens apps and mixed reality in general, so we knew that in order to knock this project out of the park, we had to think about how the virtual environment could interact with the present reality.

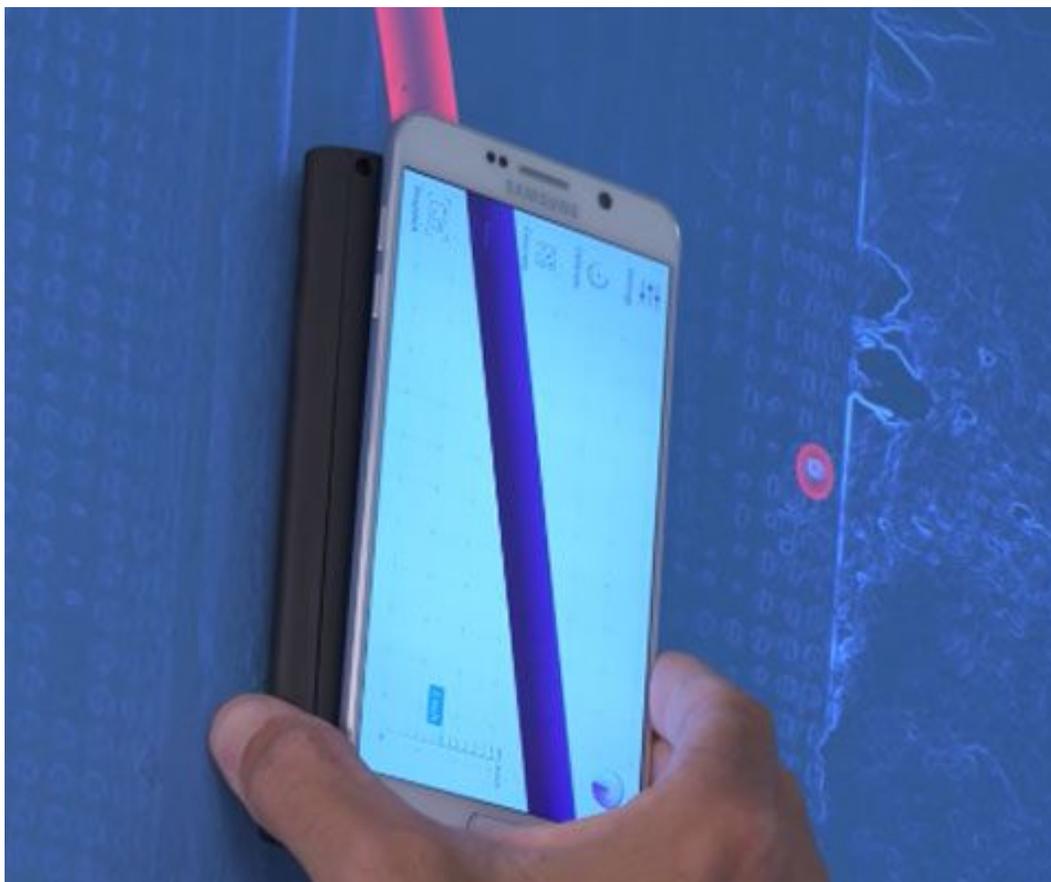
OTHER IDEAS AND WHAT LED US TO THEM

PLANETARIUM - Initially our team was jazzed about making a HoloLens App that you could use to look up and see the night sky based on where you were and what time it was. Our idea was to make the app an educational and interactive planetarium that was on-the-go. Unfortunately, we had to nix this idea when Apple announced the addition of [augmented reality capabilities in the new iPhones](#) at the Apple Keynote earlier this week. They mentioned specifically the idea of a stargazing app that displays stars and constellations. Nobody saw that coming.

LIFE-SIZED GAME - We thought about the prospect of creating a holographic, interactive life-size game of chess ([Harry Potter and the Sorcerer's Stone style](#)) because it would've been a great way to place holograms in the real world to create a really cool and unique user experience. However, upon talking to Chris, we realized that this would be a huge undertaking that would require us to learn multiple new coding

languages. In short, we couldn't carry out this idea because the programming just would have been too difficult given our limited allotment of time.

STUD-FINDER - Another idea we had was to create an app that could be used as kind of x-ray vision through walls and into buildings, specifically to find studs and pipes. This virtual stud-finder would have made great use of the HoloLens' abilities to project images into your actual surrounding because it could have projected virtual images of studs onto walls that were actually there. It was every handyman's dreams, but alas, accuracy is of the utmost importance to home repairs and renovations and we were simply unable to ensure that we could make this happen with the limited time and resources we had.



LANDSCAPING - For this idea, we dreamt up an app that would allow landscapers to place a variety of ground cover, plants, and other outdoor decorations in order to create the perfect outdoor space: the landscape architect's dream. This idea would utilize the HoloLens' technology to place holographic objects like trees, shrubs, and fountains into a physical space that actually exists. This would be beneficial to landscapers because it could show how root systems would extend or where trees would cast their shadows, allowing more than just a layout of a space. This idea was good. And because this idea was good, it helped us work towards our final idea. We wanted to implement features that allowed virtual objects to

interact with the present environment, but we wanted a more practical and less niche application than landscaping. It was exactly that thought that paved the path to our final idea...

OUR IDEA - EVENT PLANNING

Think about what a life-saver this would be. Even with mock-ups of what you want your event space to look like, you can't interact with it in real time to make the desired adjustments to your space. Our app can house a variety of decorations for the event at hand. Imagine having this capability while planning a wedding. The app would contain a variety of tables, chairs, center-pieces, etc. that could be placed within the venue to show the client. With the tap of a finger, the client has the ability to move whatever pieces they want, creating their ideal wedding venue before things are set in stone.

We've looked into it, and we haven't found anything that's quite like our idea. The closest we've come to find is [HoloDesign](#), an interior design solution created by DataMesh Consulting. This particular app has similar components, but lacks many of the features we're aiming to create in our app. HoloDesign provides users with the ability to change the look of the walls and floors as well as placing decor on the walls (see below).

