

The Current Generation of AR (Part 2)

Thr, July 30 (Week 6.5)

About Tracking

Outdoor:

Time-of-flight depth cameras don't work outside due to its mechanism based on infrared light does not work with sunlight. But, fortunately, solving indoor problems would be currently enough for AR.

Indoor:

Many buildings have similar structures between different floors and a lot of repetition is found even on the same floor. And the elevator causes a huge problem... Perhaps Wifi routers as real world anchors, but wifi anonymization (privacy)...

Indoor Tracking

Current state-of-art environment tracking:

Tracking a few rooms on a floor that are connected to each other that does not dynamically change too much with distinctive features. The area the headset can cover is not infinite, but usually about ten medium sized rooms.

Goal:

- Tracking number of rooms enough that users may not know that there is a limit (e.g., support more voxels or find a more efficient data structure than voxels).
- Solve the situation of many repetitive floors.
- Solve the problem of turning on and off the device or taking the elevator.

Indoor Tracking

Voxel storage problem:

4K Image: $4096 * 4096$ RGB values = 50,331,648 numbers.

4K Voxel: $4096 * 4096 * 4096$ TSDF values = 68,719,476,736 numbers.

While 4096 samples in a single direction would not even cover a floor of a building, even when a number is a byte, it is 68GB.

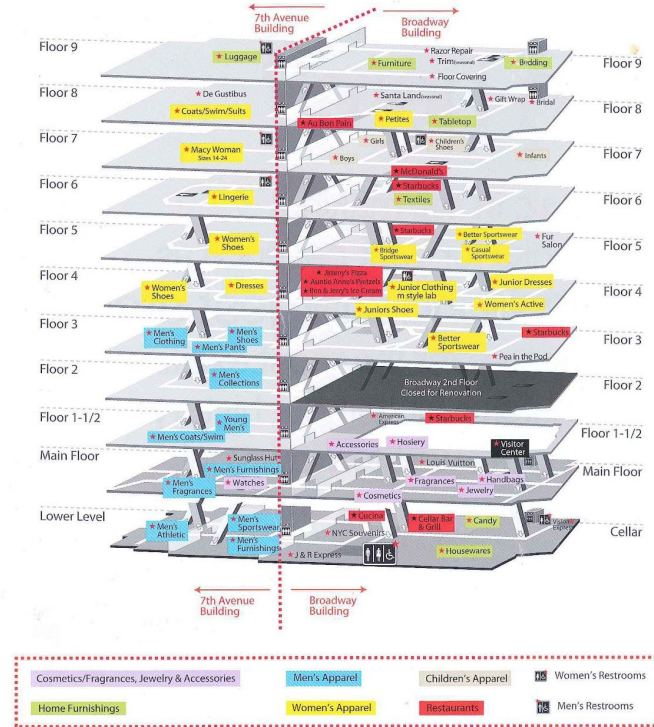
Indoor Tracking

Repetitive Floor Problem:

While GPS cannot tell more than which building people are inside, different floors do not look different enough for computer vision algorithms to be sure.

Also, how should even the map AR device creates should look like if you take an elevator and it does not know which floor you went?

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A Possible Solution

Using Wifi Routers as Anchors with Environment Data included.

Currently: connecting to a wifi router for Internet access.

Possible Direction: wifi router provides an environment map and an identifier that lets AR devices to know where they are comparing the identifier to a database.

Lack of Tool for AR Software Development

Current state-of-art method for Creating a Hololens Application:

You can create a scene using a game engine (e.g., Unity).

For test, you may use the external rendering model, using an headset only as a monitor for the computer you are running the game engine.

To deploy, or test without external rendering, it takes about 10 minutes as you have to first convert a Unity project to a Visual Studio project (i.e., a software from Microsoft) than deploy it to your headset from there.

Lack of Tool for AR Software Development

Problems:

Fundamentally, game engines were built for PC applications, not AR.

You cannot perfectly visualize an AR application on a PC monitor or fake internal rendering while externally rendering.

The tiring cycle for developers: to test an AR computer vision algorithm, you need to write code, deploy, put your AR headset in front of the target object...

Another Possible Solution

Following the website model.

Currently: deploy as apps.

Possible Direction: deploy through the Internet as if they are websites.

Updates for development and installing an app for a certain environment would be much easier and it will allow people to create tools for creating the standardized format for website-like AR apps, not Unity only being able to create a tool for Unity AR projects.

Large Deployment of HoloLens 2 in the US Army

HoloLens 2 devices worth \$500M being deployed since 2019.

MICROSOFT US & WORLD TECH

Here's the US Army version of HoloLens that Microsoft employees were protesting

A journalist got to try the military version of the headset

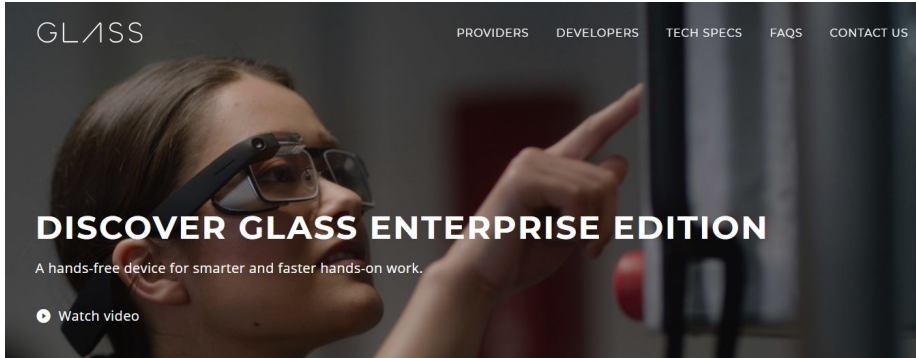
By Sean Hollister | @StarFire2258 | Apr 6, 2019, 3:59pm EDT

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Google Glass for Industries (and Hospitals)

You cannot see advertisements for the google glass anymore as an individual, but does not mean it is anyway near dead. Below is the Google Glass Enterprise Edition.

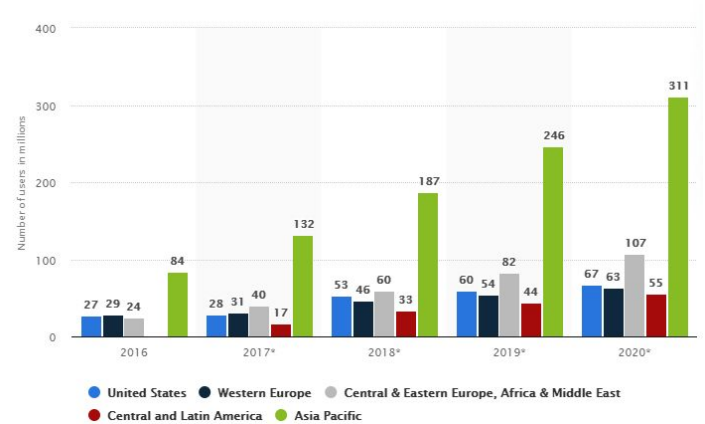


Pokemon Go is Still Very Popular

Just no longer on news articles

The Quiet, Steady Dominance of *Pokémon Go*

Two years after its launch, a look at how the game has stuck around—and what that means for augmented reality.





USD \$14.99

(or the equivalent pricing tier in your local currency; plus any applicable taxes and fees)

EVENT
Pokémon GO Fest 2020

LOCATION
Worldwide

DATE
July 25 & 26, 2020

TIME
10 A.M. – 8 P.M.

Selling AR Headsets is Still Really Hard

Report: Magic Leap's early device sales aren't looking good

Lucas Matney @lucasmtny / 10:49 am PST • December 6, 2019

 Comment



Though it really is one of the best headsets...

[The Information](#)'s Alex Heath is reporting that Magic Leap managed to sell just 6,000 units of its \$2,300 Magic Leap One headset in its first six months on sale, a figure made worse by CEO Rony Abovitz's internal claims that he wanted the startup to sell at least one million units of the device in the first year, a goal the report states he was later convinced to rethink — Abovitz later projected the company would sell 100,000 units in the first year.

Also, Selling AR Applications is Still Really Hard

Browse all HoloLens apps

Showing 1 - 90 of 352 results



Fragments

Microsoft Corporation • [Puzzle & trivia](#)

☰ Official Club ♥ Wish list



MATURE 17+
Violence, Blood

A mysterious group comes to you for help. As a detective gifted with holographic crime scenes and gather clues blended into your environment, you must bring perpetrators to justice.

Only 352 apps and still apps built in 2016 directly funded by Microsoft to prove the usefulness of the HoloLens are the best and most popular ones...



The Difficulty of Finding a New Useful Thing to Do

Apple website has an AR demo of virtually placing furnitures, similar to the application IKEA deployed since 2017. Even before then, many startups and researchers built this application, though they may have had lower quality.

