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The Reality of AR

Augmented Reality or Fragmented Fiction?

Revolutionizing AR with LiDAR

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LiDAR Sensor

In recent years, Apple has made major strides in the development of Augmented Reality for iOS devices. They have been vocal on their belief that it can genuinely enhance the user experience. In 2017, they had released the ARKit, which enables developers to create specialised AR software and applications which take advantage of the intrinsic capabilities of the iPhone. The major key to enabling these features is known as the LiDAR sensor. LiDAR, otherwise known as Light Detection and Ranging, is an existing technology that Apple had implemented into their iPhones since the 10 for its Face ID, and more recently, beneath the back camera sensors of the 12 and 13 Pro models, which enable AR functionality.

So, how does it work? Essentially, the sensor emits its own light waves which interact with the surroundings, creating a sort of 3D mesh/map. The time it takes for those rays to hit the sensor is what determines an object's distance, and displays accordingly on the screen. This all happens in real time, so the process is smooth and effortless for the user. From this information, the iPhone creates an insanely realistic and accurate 3D map of its surroundings, in which software can be used to place AR assets that can move and resize according to the points recorded on the 3D map. What differentiates this from the competition is that the LiDAR sensor uses its own light rays, independent from the conventional visible light. This not only allows it to be used in complete darkness, but it makes the 3D mapping process far more accurate, as it's not restricted by visibility and illumination. This is why Apple's face ID is so secure compared to other devices out there.

The sheer power of this technology enables so much freedom, versatility, and utility for AR applications. Augmented Reality doesn't just have to be about entertainment. iOS has an inbuilt application called "Measure", enabling users to make virtual measurements with their iPhone. This doesn't necessarily need LiDAR, however, its effectiveness is enhanced by the LiDAR sensor, providing greater depth perception and accuracy. Similarly, applications

like IKEA Place serve practical functions as well, as they can help consumers experiment with the look of their interior house design with IKEA's furniture.

Additionally, Apple Arcade contains several entertainment applications built from the ARKit. It may not seem that important but when you consider that iOS is the only mobile operating system in the market currently making these sorts of strides, it bodes well for the overall reputation of the company and their associated devices.

ARKit

ARKit has had several updates since its initial release in 2017. Location Anchors is one such feature that has been frequently updating since its inception, via ARKit. It essentially acts as an AR hotspot that allows you to place full AR models which then are geographically tracked and saved. This obviously can provide architectural benefits, such as allowing you to move around the virtual structure, to gauge the overall look from every direction.

Memojis

In 2017, Apple introduced a feature known as Memoji. Utilising the LiDAR scanner next to the front facing camera, the iPhone creates a 3D mesh of your face and maps a character rig to it. In doing so, the "Memoji" displayed on screen tracks and matches your facial movements. This feature, while having no practical utility, displays the power of iPhone's ARKit and LiDAR sensor, when utilised in tandem.

Promise and Possibility

Overall, AR has a place in Apple's future. The technology is here and it's better than ever. Through iOS, we have seen the sheer versatility and power that AR can bring to the user experience, which is further enhanced by the iPhone's exclusive hardware. I look forward to see how this technology can get better.

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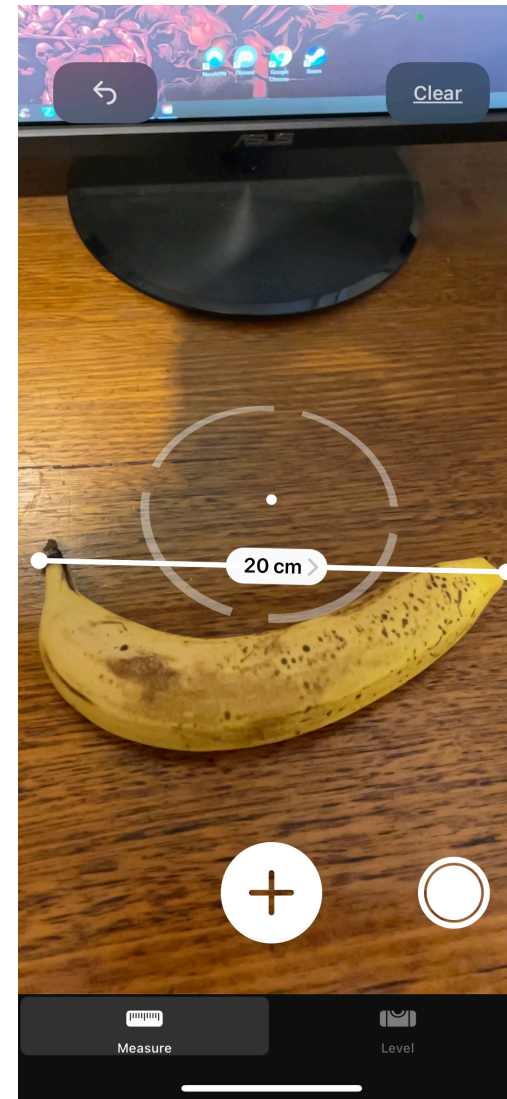Auganix (2021). Apple announces ARKit 4 with new Depth API, Location Anchors and expanded Face Tracking support [Article]. Retrieved from: https://www.auganix.org/apple-announces-arkit-4-with-new-depth-api-location-anchors-and-expanded-face-tracking-support/.
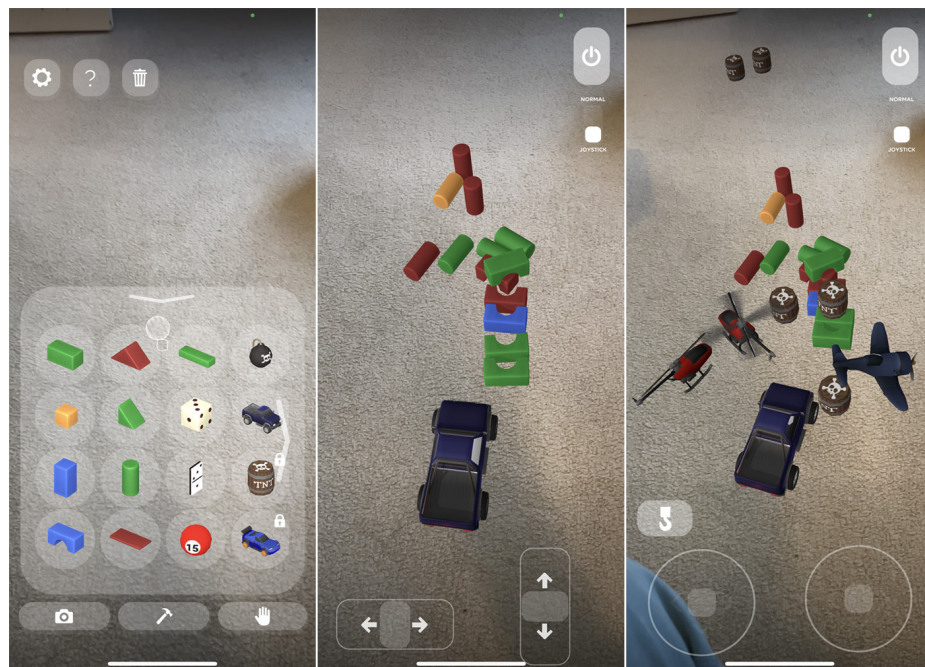
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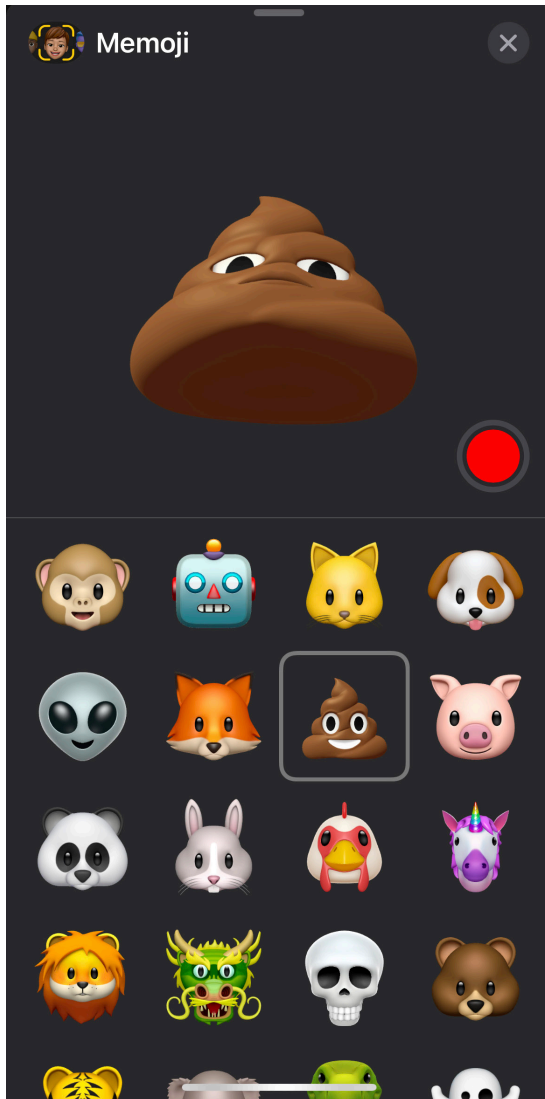
Memojis

Measure App

ARKit Games

Location Anchor