

# Augmented Reality

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## Abstract

The field of Augmented Reality (AR) is a relatively new one. While the field has only existed for about two decades, in the last few years it has seen an exponential increase in interest from engineers and developers. But what exactly is Augmented Reality? Augmented Reality is a "live, copy, view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input." [Wikipedia] The goal of Augmented Reality is to enhance a users perception of and interaction with the real world. It does this by supplementing the real world with 3D virtual objects. These 3D objects seem to coexist in reality, and can be interacted with in real time as well. A key component of Augmented Reality is registration. Registration refers to the task of accurately aligning virtual objects in the real world.

One of the key features of Augmented Reality is that it is unrestricted. It can be used with multiple display technologies, be it virtual reality goggles or mobile phone screens. Nor is it limited to just visual interaction. One can even include other sensory enhancements such as audio and touch. These features lead to lots of potential uses, such as Google Glass and Layar, which are currently at the pinnacle of contemporary Augmented Reality technology. Google Glass is a wearable computer with an optical head-mounted display developed by Google X. It displays information to the user in the corner of the lens, and communicates using natural language voice commands. It offers all the features of a smartphone that is always accessible at the corner of ones eye. Layar is a mobile app that allows users to add and view virtual objects in the real world. The app uses the phones accelerometer, primary camera, GPS and compass. These are used to identify the users location and field of view. Then, the user can see the virtual objects that were placed at his geographical location as a layer over the cameras view.

These applications of Augmented Reality are simply the tip of the iceberg. The future of Augmented Reality is clearly bright, as it progresses on from our cell phones and game consoles to non-technological objects.

In the near future, one may be able to put on their AR goggles and play a real-time strategy game on the tabletop in front of you. You may learn things about the city you've lived in for years just by pointing your AR-enabled phone at a nearby park or building. You can make virtual signs or notes to remind you of actions and tasks. However, one will have to consider the fact that there will be some challenges that Augmented Reality will need to overcome. On the technical side, an issue that needs to be dealt with is the accuracy of GPS. As of now, GPS is only accurate to within 9 meters and doesn't work very well indoors. There are also some social concerns. An overreliance on Augmented Reality could mean that people are missing out on what's right in front of them. Additionally, using Augmented Reality extensively could also reduce a users level of social interaction and not offer the personal touch and experience that a person has, but a computer software does not.

Augmented Reality will be a corner stone of all future technology. Therefore, it is important to be informed of its uses, and how to maximize its potential to make sure it is used effectively and efficiently.

Sources:

- How Stuff Works
- Wikipedia