Augmented Reality

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Introduction

Augmented reality, as defined by *Collins English Dictionary*, is "an artificial environment created through the combination of real-world and computer-generated data" (Collins, 2012). Essentially, it is the technological ability to overlay important and relevant information on a real time image via advanced image recognition. Augmented reality is the future of information technology, and so naturally is very up and coming in today's world. It is featured on applications such as "Aurasma" and "Google Goggles," and has been featured and demoed on popular websites and lectures such as "Ted Talks" (Mills, Lecture, 2012). In this document, augmented reality will be analyzed from social, legal, and ethical standpoints, and will also be viewed and scrutinized for any security concerns.

Background

This section is dedicated to further explanation of augmented reality, including appropriate examples and everyday use. The most overlooked and comprehensible examples of augmented reality occur during NFL games. In real time, the announcers are able to draw circles and lines around players or mark how far a given team needs to progress in order to achieve a first down. It is, by definition, augmented reality. The drawings are overlapped with the broadcasted real image. The graphics are not actually present on the field, and are only shown on the television broadcast. This basic example of augmented reality was introduced to the NFL in 1998, and so is relatively new. As technological advances occurred, augmented reality followed suit. Two recent smartphone applications are taking the world by storm.

"Google Goggles" is an augmented reality based search engine with advanced image recognition technology. Fundamentally, the application functions when the user points the device camera at an object. The image is cross-referenced with data on the internet. In turn, the application provides the user with similar images, related links, and information on the object captured in the image. "Aurasma" is an augmented reality application that functions based on the creation of "auras" (Mills, Lecture 2012). Auras can be created by "Aurasma" users, but the most effective auras have been pre-uploaded by the company. The most effective and efficient way to explain auras is by example. There is a pre-uploaded aura called "NBA Logo." When a device running the application is pointed at the classic NBA logo, nothing happens to the actual logo. However, on the device's screen, the player present in the logo begins to dribble the ball around and court and crowd noises are audible. After the short animation, the most recent "NBA Top 5 Plays" highlight clips are shown on the devices screen. Note that the only space affected on the device's screen is the area in which the NBA logo is present. Anything other than the logo will remain exactly as it is.

<div align="center">Social Implications</div>

As should be obvious, augmented reality is a futuristic technology with boundless potential. In the premiere demo of the augmented reality application "Aurasma," a device is directed at a newspaper article regarding a recent tennis match (Mills, Lecture, 2012). Instantly, highlights from that specific match began to play over the photo in the newspaper and all the text remained so that the viewer could read about the match while viewing clips from the same match. If augmented reality applications become fully functional and are integrated in to pop-culture, information could be shared and accessed at leisure.

In recent times, any sort of information can be found through search engines. But there are restrictions on search engine research. For example, if one does not know what to search for, information cannot be accessed. Imagine, however, a scenario in which a beautiful building is visible in the distance. When the device is pointed at that unknown building, the application could tell the user the coordinates of the building, the date it was built, the architectural style, the name of the building, its function, and how many of the user's peers have visited or seen the building. Furthermore, users can create auras for that specific building or its respective city that may contain graphics or animation other than specific information. For instance, a user could point his device at any building in Times Square and see Spider-Man swinging around the skyscrapers from building to building. As a technology with legitimately powerful practical use and staggering entertainment value, augmented reality will soon be used by everyone.

Legal Issues

According to Brian D. Wassom (2012), a commercial litigator, there are some potential legal issues that augmented reality companies could struggle with. Because augmented reality technology is still relatively new, legal disputes can only be predicted based on the current level of the technology. One rather important issue is even present today with text messaging. It is feared that augmented reality applications may become so relevant in people's lives that it could prove to be a fatal distraction while driving, running, or doing other activities. Another prediction is the arrival of patent discrepancies (Wassom, 2012). Cases like the current "Apple vs. Samsung" could serve as a means for larger companies to monopolize on the upcoming technology. The sample Wassom provides concerns augmented reality eyewear. Such eyewear would allow the user to view their entire world through an augmented reality lens. Like the smartphone, it is almost certain that patent issues will arise. Additionally, if augmented reality

technology were to become heavily user based, there is always the risk of inappropriate material to be displayed against the users will. As is true with all widespread technology, there are ethical issues that cannot be overlooked.

Ethical Complications

As noted, ethics can never be ignored when a new technology is growing. The biggest fear is that the pornography industry will be heavily involved with the rise of augmented reality. Wassom (2012) records that, "You can always count on the military and the porn industry to push technology forward." He continues to cite a law enforcement officer's prediction that "wherever society finds pornography, child pornography is not too far behind" (as cited in Wassom, 2012). Along the same lines, augmented reality could certainly give the average person easy access to far too much information. Perhaps augmented reality will allow the user to view information and qualifications on a potential employee through eyewear (Day, 2005). Or, it could allow more savvy users to view a person's address, place of work, likes, dislikes, date of birth, and even more personal information. It is possible that augmented reality will evolve to be the most dangerous and manipulative technology to date.

Security Concerns

The majority of the security concerns regarding augmented reality technology have been covered in the ethical and legal issue sections. However, there are some relevant examples that provide a good basic knowledge of a few ways augmented reality could entirely circumvent current security technology. It is not unconceivable to envision advanced technology in the augmented reality area that could give the handler access to formerly classified files and information. Nor is it impossible to conjure a scenario in which the user could view encrypted

data using some sort of augmented reality eyewear. Understandably, there is some hesitance in the progression of such a daring and advanced technology (Aurasma, 2012).

Conclusion

Although augmented reality technology exists, it has a long way to go before it is seen in everyday use by a large population. There are numerous hurdles to overcome from the legal standpoint, but augmented reality companies also must take in to account the plethora of possible security and ethical snags. Augmented reality opens new doors into an entirely new world of possible crime, but it is also regarded as one of the most innovative and important technologies in existence. It is even possible that augmented reality could evolve in to the technology of the future and be the biggest development since the World Wide Web. It is an amalgamation of the most powerful search engines, social networking, and business applications. Much like the smartphone, once augmented reality is widespread; to live without it will be unimaginable. Augmented reality is the way of the future.

References

5 Predictions for Augmented Reality Law in 2012 | Law of Social & Emerging Media | Wassom.com.

(n.d.). Retrieved October 1, 2012, from http://www.wassom.com/5-predictions-for-augmented-

reality-law-in-2012.html

This upload on legal issues of augmented reality by Brian D. Wassom provided the base for the

"Legal Issues" section of the document. Wassom provides justification for all of his predictions,

and is very experienced in his field.

Augmented reality | Define Augmented reality at Dictionary.com. (n.d.). Retrieved October 1, 2012,

from http://dictionary.reference.com/browse/augmented+reality

The only purpose of this source was to have the official definition of the term "augmented

reality." It allows the reader to understand that the subsequent writing will be credible.

Aurasma. (n.d.). Retrieved October 1, 2012, from http://www.aurasma.com/news/2012/10/01-demo

"Aurasma's" news website provides information on the progression of the "Aurasma"

application. As is obvious, there is are not very many news articles, nor are the news articles that

are present very groundbreaking. It goes to show that this technology is a huge step forward and

will take very long to successfully master.

Day, P. N., Ferguson, G., Holt, P. O., Hogg, S., & Gibson, D. (2005). Wearable augmented virtual

reality for enhancing information delivery in high precision defence assembly: an engineering

case study. *Virtual Reality*, *8*(3), 177–184. doi:http://dx.doi.org.mutex.gmu.edu/10.1007/s10055-

004-0147-8

In this journal entry, virtual reality eyewear is discussed by the author. Augmented reality is sort

of a hybrid between the virtual world and the real world. Much can be learned from studying

similar technology that acts as a stepping stone toward something better.

furmanski-ismar02.pdf. (n.d.). Retrieved from

http://graphics.cs.columbia.edu/courses/mobwear/resources/furmanski-ismar02.pdf

This reference proved extraordinarily enlightening. It is based on augmented reality visions

guided by cognition. The technology allows obscured objects to be viewed among other things.

Although not explicitly cited within this document, this journal entry provided much information

needed to better understand the concept of augmented reality.

Mastrion, G. (2010). Augmented Reality: The New, New Media. *Pharmaceutical Executive*, *30*(7),

82–83.

In an article in "Pharmaceutical Executive," augmented reality is discussed from a medical

standpoint. It provides numerous examples of beneficial results from the use of augmented

reality to assist in health practice.

Matt Mills: Image recognition that triggers augmented reality | Video on TED.com. (n.d.). Retrieved

from

http://www.ted.com/talks/matt_mills_image_recognition_that_triggers_augmented_reality.html

This lecture by Matt Mills on "Ted Talks" was the source that got me interested in the

augmented reality topic and field. The entire lecture is informative, funny, and jaw-dropping. It

is certainly recommended, and it is only eight minutes long. The lecture is a demo of an

application called "Aurasma."