**Ethical Issues Report**

**Data Protection**

The new General Data Protection Regulation reshapes the way user’s data can be handled (Eugdpr.org, 2019). When developing an augmented reality application, it may be necessary to gather and store user information. The way in which we handle this data must be in accordance with GDPR.

Geolocation data can be gathered and used in mobile device applications in which the user is willingly carrying the device. A similarly broad ruling is likely to apply to augmented reality applications (Wassom, 2014).

The presence of sensors, cameras and microphones mean augmented reality headsets can collect a lot of user information. It is important that augmented reality application developers and hardware manufacturers work to ensure that these sensors and the data they gather are not breached to maintain user privacy.

**What can and can’t be augmented?**

Games like Pokémon Go use physical locations in their application in which Pokémon and hotspots can be augmented. It is considered unethical to interfere with private property owners to use their property, which may happen because of augmented reality.

An augmented reality application can add virtual content and resources to a physical location, attracting users. A property owner may succumb to unwanted attention or interference due to the virtual significance of their physical property.

Neely states that ‘Just as a person has rights over their physical property, so too should they have rights over augmentations to that property.’ (Neely, 2018).

**Privacy**

A problem with AR is the hijacking of public spaces; people or firms could easily be upset if your AR placement is controversial covering local monuments or business locations. Even if you think your placement isn’t an issue it could be characterized as “virtual graffiti” (Blum, 2019) as it may not be appropriate or respectful for a reason unknown to the developer.

This is going to become even more of a problem in the future when AR could possibly move on from needing devices such as phones to things like glasses that you can wear every day which are harder to notice compared to something like a mobile phone and if the user is recording someone or something that they do not have permission to do but are not noticed as it is more discreet this can cause problems (Denning et al., 2014).

If this becomes a reality it will be a problem both ethically and legally as people or areas may want to opt out of AR, and there will need to be laws written to allow privacy and around private owners virtual space around their property.

**Liability**

AR programs or games such as Pokémon GO can cause legal issues due to users’ activity (Paavilainen et al., 2017) for example there have been numerous examples of people getting in trouble for trespassing to catch a Pokémon.

The problem comes with whether these legal issues are the responsibility for the user for not being mindful of the laws and rights of people and places around them or if it is the companies for having the AR feature appear there, even if this is generated randomly or by an algorithm.

This introduces the question of what are developers responsible for that users do Pokémon GO added a speed limit to the app to stop people playing while driving as this was becoming a problem for them and they were worried about lawsuits against them, there are going to have to be numerous laws developed around this area to control and regulate both users and company’s and make sure any blame is placed on the correct party (Pase, 2012).

**Culture and Religion**

What sort of content should people be able to augment if for example adult content producers or other things that would conventionally be restricted? Currently, this content is out of sight for the average person, and they must explicitly search for or go to these websites.

With AR technology it may become the case where public places are augmented with adult themes; for example, an adult store could have their shop front augmented. The question becomes what should happen with this and how should content be separated, should there be age restrictions on AR technologies, or should there be packages that allow users to see adult products or themes specifically. Even if this is monitored, having adult themes augmenting public places could potentially be ethically wrong and could cause a myriad of problems culturally (Roesner et al., 2014). This also must be addressed because of child protection laws and how online adult content is restricted, but in the augmented world It would have to be closely monitored to ensure that everything a specific user is seeing is appropriate for them. Lastly, it could cause issues with members of specific religious groups, for example, an image of the prophet Mohammed is forbidden within Islam so things like this would need to be heavily controlled to not offed large groups in the population.

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