

Analysis of the Social, Legal, Ethical and Professional Issues

Specification: Use of Augmented Reality in guiding students around University

In the specification the student uses the phrase “real time images” are going to be used when using the app, the issue lies if the images are saved on a server. If these images are saved for longer than they appear on the phone, then it could be seen as a breach of people’s privacy and they would not have given consent. This could be avoided by identifying faces on the camera and blurring them on the app. An example of this is simply google maps. Everyone’s faces are blurred on the website purely because it is a breach of privacy to have your face stored on a website without consent.

Another issue of this specification is that when someone is so engrossed to their phone it can distract them from what is happening around them. If someone is looking on their device they can’t concentrate on if there’s a busy road, or a bike. An issue the student needs to tackle is that is it going to program the app to flag up a message when the user is coming towards a busy road because it already is using GPS information.

Looking down at your phone whilst waiting to cross a road can be dangerous in a way because someone on a motorbike can drive past and steal the device right out of the user’s hands. Security precautions need to be taken, if there is a sudden acceleration change whilst on the app will the program recognise it has been taken and lock the phone? In 2012 there 827 cases, in London, of phones being stolen by criminals on bikes and mopeds. That statistic has now increased to more than 23,000 offences last year, this is all because people are so attached to their phones nowadays (Calver, 2018).

In 2014 the android app “Ingress” was realised that involved two factions competing against each other, using augmented reality, to be in control of Mind Units. This was done by physically going to a location and “tagging / marking / closing / taking over” that area. The app was an immense success but due to the anti-social behaviour and “suspicious persons” walking around on their phones caused floods of 911 calls to the local police department in Kansas. There was an incident in the Church in Park City where two people sat in a car in the car park for a long time for “no apparent reason” so 911 were called by concerned locals (Wassom, 2014).

Another example made by the same company is Pokémon Go. In 2016, the app had the concept of going to locations to catch Pokémon and to take over gyms. But the game because it is so addictive that people were desperate to get all the collectables and stop at all the “Pokéstops”, this lead to people playing the simple AR game whilst driving, the vast amount of car accidents caused by this game cost the US up to \$25.5 million in damages and two lives were lost. People were also trespassing on property and reaching places that were never meant for people to walk over such as cliffs (Dengler, 2017).

A flaw of the app could be down to how often the map is updated and which map it uses to update. Some maps are outdated and don’t have all the newly built roads on so this could become an issue when trying to navigate to a location.

Another thing to consider would be if new buildings for the University campus are built, how quickly are they going to be added to the application to help students find. But also, if a building is no longer used is it still going to be on the map? These minor issues could confuse and hinder the user trying to find their next lecture.

An example of an augmented reality map is one that is used to help the blind and visually impaired is Cydalion. This is a navigation assistant to help navigate them to their desired location (newgenapps, 2017). It uses “object detection” and “object height detection” to make the user aware of their surroundings, it also uses “custom sounds” and “personalised user interface” to customise the assistance to make it as effective as possible (Cydalion, 2019).

The users GPS data is required for this app to work. Having that information can cause some issues, one issue is that if the user's GSP location is always being used even when the app is not in use then this can be seen as a breach of GDPR as the user may not have consented to their location to always be available for the app to use (Connor Jones, 2019). The constant use of the user's GPS location could lead to the app tracking the device and possibly learn the student's habits. Doing this is a breach of privacy that would need to be handled.

Examples of GPS tracking location being used are; the 'T8 mini gps tracker' aimed at kids, seniors and pets for family/careers to track where they are. The issue was the default password for all the devices was "123456" this poses as an obvious security threat which lead to 30 devices being hacked and having their microphone and GPS location available (GPS trackers are leaking info on your kids: What to do, 2019).

The other example is a conservative MP, Scott Mann, said: "Every knife sold in the UK should have a GPS tracker fitted in the handle." For some people this is a positive statement as it could decrease the statistics of knife crime and Mann says it would aid the police force into finding criminals. But some people could see this as breaching their security as they could only own a knife for self-defence. The MP goes on to say if we have a system for guns, we should for knives but the main reposition is the cost (Griffin, 2019).

PROJECT SPECIFICATION 7

Student:	
Date:	28/09/2017
Supervisor:	
Degree Course:	BSc Computer Science
Title of Project:	Use of Augmented Reality in guiding students around university

Elaboration

The university campus is comprised of a number of buildings that can be difficult for new students to find their way around. The purpose of this project is to develop a mobile application that guides students around the university campus.

The application will be developed for iOS platform and will make use of the new ARKit framework, which allows the creation of high quality augmented reality(AR) experiences. Using AR technology, the application will provide a more user-friendly and immersive way of navigating the university. It will map out university buildings on real time images and the students will be able to know the rough direction of the desired building by a quick scan using their phone camera. Precise routes to the buildings will also be available in AR.

Project Aims

- Develop understanding of AR technology.
- Develop understanding of the use of Location Service and GPS data in navigation.
- Implement an AR application that integrates with location data.
- Evaluate effectiveness of the application in assisting new students.

Project deliverable(s)

The deliverable of the project will be an AR application on IOS platform. The application will:

- Map out all the university buildings with AR technology using user's current location.
- Direct user to the selected building using GPS data. AR will be combined to map out the route and direction arrows using real time images captured from camera.

References

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