Quantified Student

Attendance prototyping

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# Version History

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# 1. Introduction

Quantified student contains a lot of different data sources and points. One of these data sources is the Quantified student application which gathers information about the attendance of a student at his school location. Attendance data is a valuable source for students because it can provide insights in how often they are at school over a certain period. This can give realisation and boosts, especially if it is compared to a peers’ attendance data.

Other that it is important for social contacts to attend school and lectures it also it researched that it significantly improves study performances if a student is at school often.

In our own research about data sources and points we have surveyed students with the question which data could help them motivate themselves and which data could be valuable to know in relevance to study performance. Our of this research we concluded that one of the data sources a student is interested in to see is the attendance at school.

In another research conducted by us we asked the question how we could reliably track the students attendance. Various different options are researched and looked into, for example the use of wifi data to see if a students’ device was online on the wifi. Another approach that was looked at was geofence data. Then we would track the students’ location via a mobile application. This came out to be the best, easiest and most viable option because we already needed a mobile app to track biometric data so that was already there, and the student could set regions of school buildings by himself. This is in particularly handy because some schools have multiple buildings or do not support wifi attendance data.

In order to test if this above described option really is viable and to get het best practises, a prototype application will be made. This application will track the users location via geofencing.

# 2. Strategy

The quantified student attendance application prototype will be used by all the quantified student development team members. This way we can gather real live data from a significant amount of people. This data then is sent to the quantified student database api where it is saved in order to be visualised. For this prototype the developers will carry the app in active state for at least a week in order to subjectively and accurately gather information about attendance. With this amount of data we also can make an accurate full week chart.

# 3. Prototype objectives

This prototype will be built in order to validate the research documents created about this subject. We are going to test if an geofence application on a users’ phone works reliably and efficient. This geofencing feature is to gather data about a student’s school attendance. From our research we concluded that when students attends school more often, they are more likely to get good grades.

# 4. Assumptions and constraints

For the prototype to work stable and reliable there are a few assumptions. Firstly the user of the application has to have an iPhone, The application is an IOS native application which is tight to the apple eco system.

Second assumption is that the application has always location services. This means that the application can access the users’ location at all time in the background.

Next is that the phone has to be turned on for the application to work. If it isn’t, all processes are shut of and the application does not work.

Another important thing to consider is that the phone has to be online. This is to make sure that the right information can be sent to the backend and save it.

And lastly the phone’s location service should be turned on for the geofencing capabilities to work. If it isn’t, the application can’t see the users’ location and therefore can’t determine if the user has entered or exited the radius

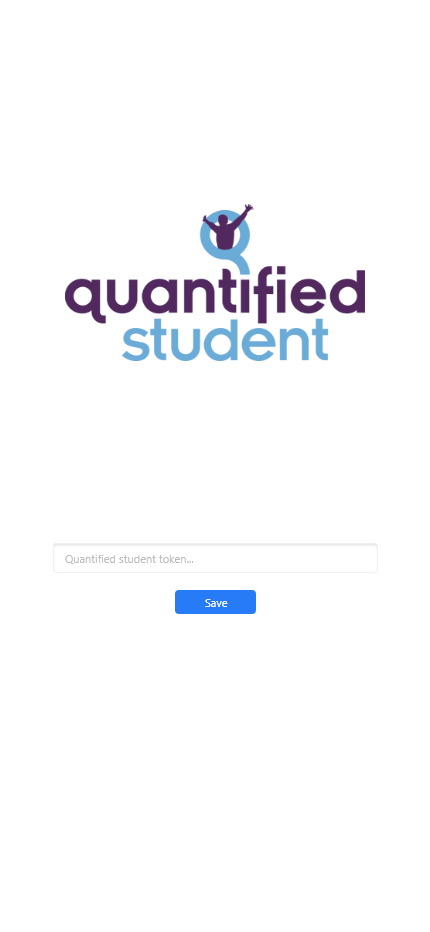
# 5. Prototype scope

To test the assumptions and description as noted above an IOS native application will be made. This is beneficial because every development team member has an iPhone, the application could be made with a universal language like react native or flutter, but that had some implications regarding distributing it. The application then will geofence the users’ location at the Fontys strijp T-Q building. This data then will be saved with the users’ id in the quantified student database. This data then will be displayed within the quantified student dashboard.

# 6. The application

Users of the application can install it and it nearly will work right away. The only thing they will have to configure is the canvas token they obtain form the canvas settings page. This is necessary to authenticate the users with the database and to be able to know from whom the request comes.

After this initial one configuration step the application works independently in the background and doesn’t have to be opened again.

Every time the test objective leaves or enters the 200 meter radius around the fontys T-Q building he gets a phone notification to confirm the user it has leaved or entered. After that the application sends a http request with the canvas token and the state the user is in, this can be two things entered which will be the value 1 and left which will be a 0, to the quantified student api which will register the user as the appropriate state.

The code for this prototype application can be find at the following GitHub repository: <https://github.com/quantifiedstudent/QS-geofence-prototpye>

# Conclusion

After having tested implemented and tested a simple geofencing application I came to the conclusion that this is in fact a very viable option for quantified student to track student’s attendance. It his highly customizable for the user and does not root access to some wifi api. It works with every location and even with multiple location. This covers the fact that some study institutions may have multiple faculties and buildings.

There may be concerns that the student has to install a whole app only to track the attendance, but in the feature this app can be extended to support smartwatches in order to extract biometric data.