Augment Fulda

Mobile Apps Documentation

Augment Fulda*: An AR based mobile Application for HS Fulda*

[*https://www.youtube.com/watch?v=z4p7fVaLyDY*](https://www.youtube.com/watch?v=z4p7fVaLyDY)

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Augment Fulda: Introduction

For mobile application course I have developed an augmented reality based application for HS Fulda that will help the new student of our university to track the university buildings and their locations within the university premises using the live camera. I've named the application as **"Augment Fulda"**. My application is a mixture of Markerless and Marker-Based augmented reality which shows the markers of buildings within the live augmented reality camera using the geo coordinates and sensors. Furthermore, the application is also capable of detecting few important buildings of university and upon recognizing them a banner with the details regarding the recognized building is augmented over the building in live camera scene / screen. Below is the basic screenshot of this application.
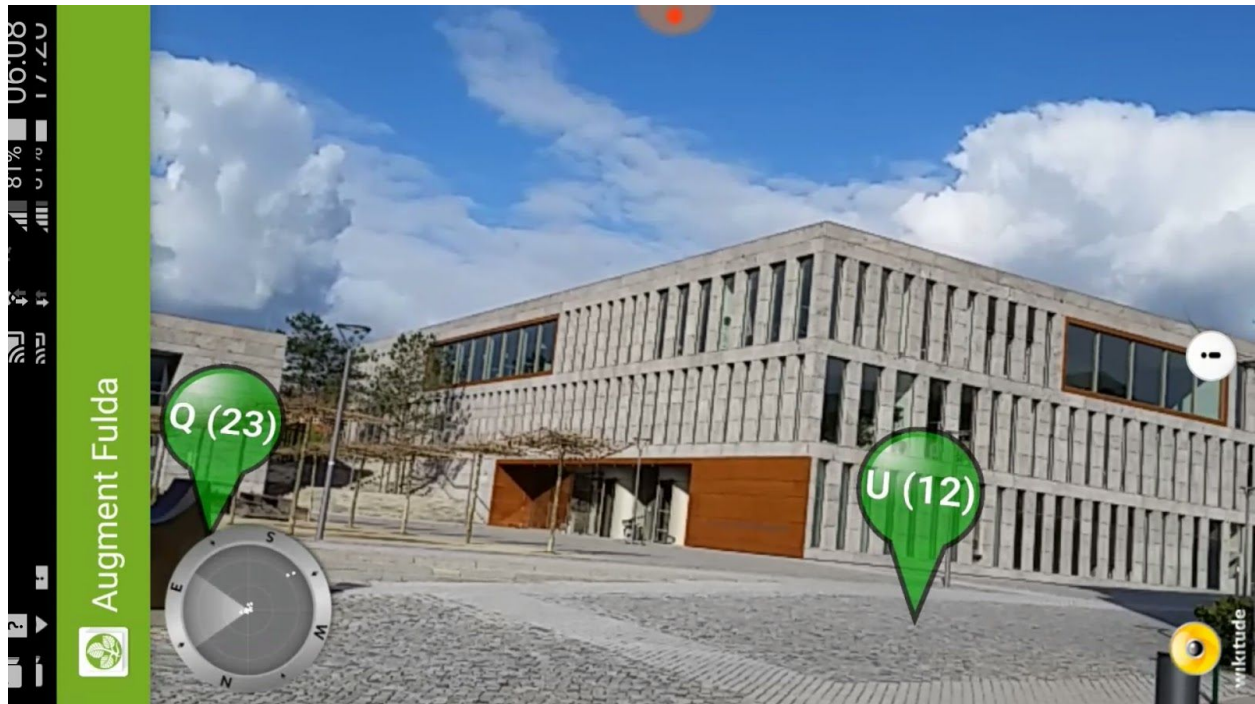
Motivation

Since the university comprises of more than 30 buildings it is really hard for a new comer to find a particular building unless he/she goes near to every building and check the label mounted on the wall. Furthermore, it is itself a struggle to find the board where exactly it is :-). Although I am here for more than 6 months but I still struggles to find out a building that's not common for students of computer science department. Considering the mentioned issues I found augmented reality application the best option to solve this problem. **So I present students of Fulda my Augment Fulda application, I hope it will help them track network of buildings.**

Features

- See geo pointers with building (name) label being augmented on the actual building real time in the live camera.
- Pointers will change size according to user's distance from them. If user is at distant location they will be smaller otherwise they will resize bigger accordingly.
- All available pointers will be shown in the small radar as white dots over the radar.
- Click on pointers visible on live camera to check a particular building's details. For instance offices in that building, available labs as well as *distance* from current location.
- Click on the *show images* button in the building details panel to see selected building's inner and outer images.
- Selected pointer will be shown in Blue on the radar.
- View the direction of buildings in the live camera using radar.
- View the list of available university's buildings by tapping on the radar.
- See the actual position of a particular building with the help of direction indicator by selecting a building name from the list.
- Point the camera on a particular building and check which building is this with the help of building detection.
- Once a building is recognized, a banner with building details will be augmented on the live camera until building is within the scene.
- Click on the augmented banner to check the official details available on the university website. In app web browser will be opened.

Technologies

- Java
- Javascript
- JQuery Mobile
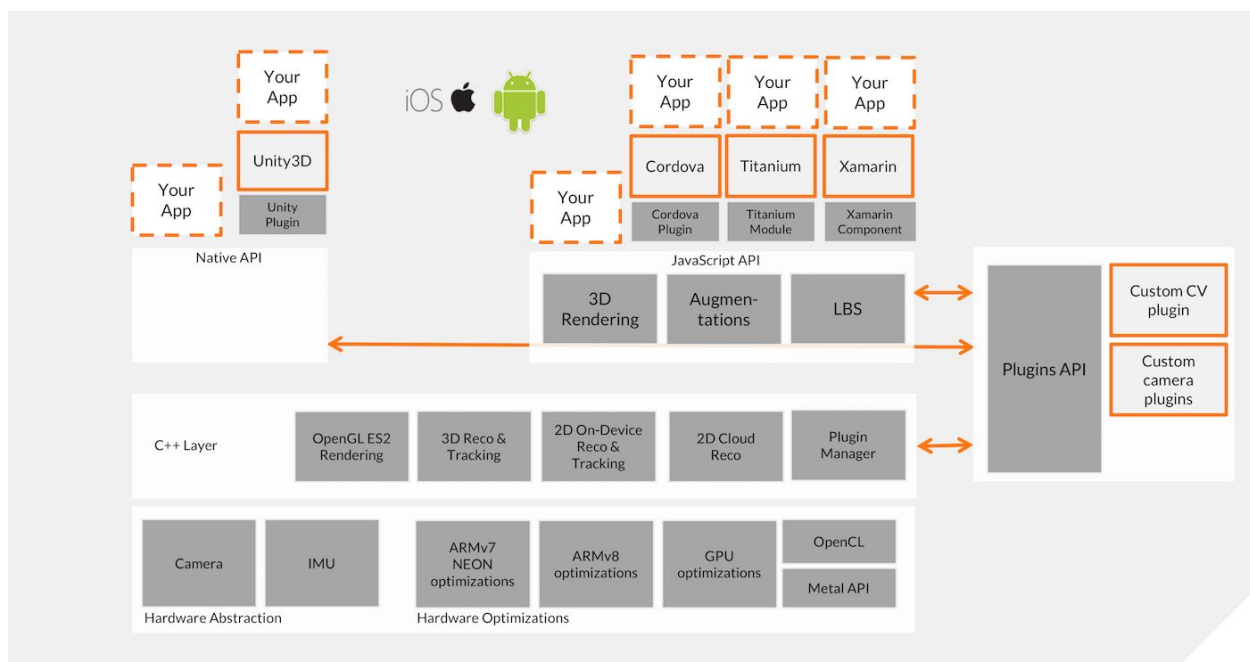- HTML5
- CSS
- Wikitude SDK
- Android Studio
- PHPStorm

Implementation Summary

For this course I have targeted only latest android mobile SDK (>=24). The application is a mixture of Java and Javascript language. The major part related to augmented reality rendering is written in Javascript. For the augmentation of object in the AR scene (or in live camera) HTML5 and JQuery mobile is used. I've used Wikitude Android SDK to develop this application. The android code has one main activity (`MainActivity`) that loads the Javascript and HTML5 code from the assets folder. Once the code is loaded into the main activity all the logic behind user interaction with the application will be taken care by the code written in JS that uses Wikitude Android Javascript SDK to augment markers, banners and other object in the AR scene. The Wikitude JavaScript API provides access to the functionality of the computer vision engine, location based AR and dedicated rendering functionality. I have also added another android activity (`PointerDetailsActivity`) just to demonstrate the interaction of my Javascript code with the android Java code. Furthermore, android specific code keeps our javascript logic updated with the latest user locations. **Fig # 01** is the structure of my application's code in which I have also highlighted the main folders of the application. Moreover in **Fig # 02** the architecture of Wikitude SDK is discussed that demonstrate how the whole functionality works between native android and JS SDK.
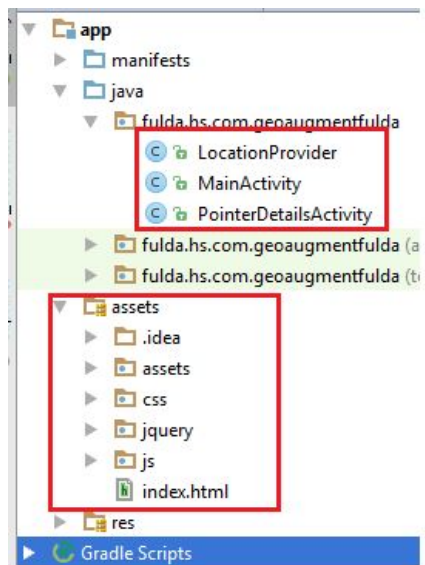
Fig # 01 | Code Structure

Fig # 02 | Wikitude SDK Architecture

Demo

Since pictures and/or videos worths a thousand words. That's why I've spent a significant amount of time to create a demo video of my application. Please play the video below to see the application in action.

Link: https://www.youtube.com/watch?v=z4p7fVaLyDY