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# A Disappearing A pillar

PROJECT PLAN

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# 1 Introduction

## 1.1 PROJECT STATEMENT

In daily vehicle driving, cars' A pillar will hinder the driver's judgment and vision of things in the front. Therefore, we decided to project blocked view through the tablet to the driver. Create A personalized app for customers. This app can adjust the direction and size of the image according to the size of A pillar.

## 1.2 PURPOSE

Probably a lot of people have gotten used to the existence of car's A pillar. It does have his functionality, for example, as part of the car's overall structure, carrying the weight of the car, the frame of the front window of the car. But the most important thing about driving is safety, and many people use it as a yardstick when buying a car. Cars' A pillar undoubtedly hindered part of view, that small part of vision may be caused by many unsafe factors, especially when you are in turn, it blocks off your left front view. So it is very difficult to interpretation is safe or not in the front. Our products will largely solve the defect of vision loss, which can meet the requirements of consumption.

## 1.3 GOALS

Our main purpose of this project is to achieve the disappearing of A Pillar. To this end, we are going to design an app that will be based on android system and can be ported to various devices, and eventually customers will be able to adjust according to the size of their vehicles.

# 2 Deliverables

We will invite potential customers to evaluate our products without informing them. And we will improve our product according to the data we collect with. Therefore, our final product quality and requirements depend entirely on customer satisfaction. We will try our best to make the products marketable, adjustable and applicable to various equipment systems.

## 3 Design

In order to make the A-Pillar “disappear”, we will attach an appropriate size tablet onto the car’s A-pillar, and we will also attach an adjustable camera in the front of the car and the pictures that captured by the camera will be real time projected on the tablet. Moreover, we will design an Android App to make the picture adjustable so that it will be suitable to the car’s A pillar. Our main idea is to be able to put our app into different kinds of tablets, introduction and clear user interface will let customers flexible adjustments according to the requirement of the vehicle itself.

### 3.1 PREVIOUS WORK/LITERATURE



Image: Jaguar Land Rover

Jaguar has developed a technique called 360-degree view, which would use sensors and cameras to feed images to the embedded screen in the car pillar and would also project the image on the windshield. It will only be active when there is some information need to convey.

Reference: Philip E. Rose, “Jaguar Plans a (Partially) Transparent Car”, IEEE Spectrum. 17 Dec, 2014.  
<<https://spectrum.ieee.org/cars-that-think/transportation/advanced-cars/jaguar-land-rover-make-a-seethrough-car>>

However, this solution would cost a lot of money. So that what we are going to design is a cheap and convenient way to solve the problem.

### 3.2 ASSESSMENT OF PROPOSED METHODS

1. The first solution is using the camera embedded in the tablet to capture the images and we will do some work on image processing so that the picture would look like the A pillar is transparent.
2. The second solution is connecting an external camera to the tablet, which would make the whole process easier, but would rise the cost.

### 3.3 VALIDATION

We will start with developing the software and make sure the camera would work properly. Then, we will test on our own cars to make sure it actually solve the problem. More importantly, we will invite

potential customers to evaluate our products without informing them. And we will improve our product according to the data we collect with.

## 4 Project Requirements/Specifications

### 4.1 functional

For the technical requirement of this project, as our professor mentioned during the group meeting, we are suppose to use basic Java language to write a program, which could run on a tablet and let the tablet to display the image of surrounding. Apart from this, we will also need to connect this tablet with the car computer, especially when change to drive gear, the tablet will display what is going on around the car. Those are the basic technical requirement of our design.

### 4.2 NON-FUNCTIONAL

As for the non-functional requirement, from the suggestion of our professor, the cost of our plan should be as cheap as possible. In this perspective, we plan to use the most suitable and the easiest way to finish our design. The cost of our equipment should not exceed the founding that our professor give to us.

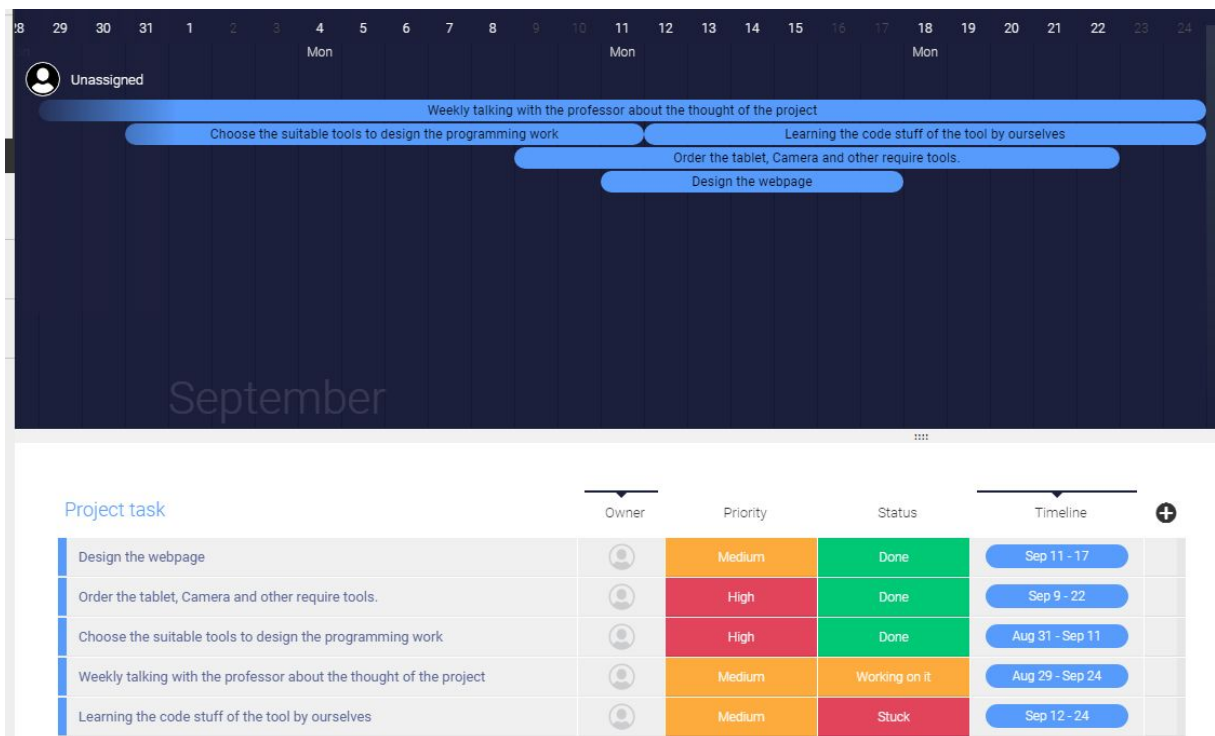
### 4.3 STANDARDS

In terms of this part, we are going to use Java Studio, because we could download it from the internet and we could find tutorial from youtube, from my personal perspective, we believe it is legal and approved by standard organizations. As for how it applicable for our project, in my opinion, it provides us a tool to learn Java and we could write Java code on it to finish our project.

## 5 Challenges

The most challenges for our team is that we are all electrical engineer student, and this project suppose us to write a code of app to transfer the image from the camera to tablet. It is something about the software, we need to figure out how to make this Android app work. We download the android studio and we watch the video from youtube to help us create this app.

## 6 Timeline



### 6.1 FIRST SEMESTER

For the senior design project, after the several weeks' talk with the professor Kim, we have the thought to figure out the approach of the disappear A pillar. We have finished our website to introduce the produced. We have decided the type of tablet and camera and bought it online. In order to get the image which are blocked by A pillar, we have chosen a JAVA Studio as the too to do the work. We are now taught ourselves about this.

### 6.2 SECOND SEMESTER

## 7 Conclusions

Our main purpose of this project is to achieve the disappearing of A Pillar. To this end, we are going to design an app that will be based on android system and can be ported to various devices, and eventually customers will be able to adjust according to the size of their vehicles. We will try to master the theoretical basis, in the first semester to be able to complete the app roughly frame construction, and we will collect more testing data which will use to support our next semester physical model construction.

## 8 References

List all the sources you used in understanding your project statement, defining your goals and your system design. This report will help you collect all the useful sources together so you can go back and use them when you need them.

## 9 Appendices

If you have any large graphs, tables, or similar that does not directly pertain to the problem but helps support it, include that here. You may also include your Gantt chart over here.