

VEHICLE TIRE STRENGTH MONITORING USING AUGMENTED REALITY

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Abstract: Now a days in petrol bunk there is a difficulty to find the amount of air to be filled in vehicle tires. Incorrect proportion of air filling leads to tire bursting and sometimes road accidents awareness of tire damages are not intimated to the drivers/vehicle owners.

Keywords: vehicle tires, road accidents awareness, drivers/vehicle owners.

I. INTRODUCTION

In this application by using image processing techniques damage level of the vehicle tires can have detected. After the detection using augmented reality the strength of the tire will be displayed in a graphical bar and it also shows the threshold pressure capacity of the tire.

II. EXISTING SYSTEM

A tire pressure monitoring system is designed to monitor air pressure which is an electronic system to find the air pressure on vehicle tire.

TPMS system intimates time pressure information to driver of vehicle even with low pressure warning signal. It will prevent travelling with hazardous tires.

III. PROPOSED SYSTEM

By capturing the image of vehicle tires which has arrived for petrol filling in a bunk, we send those images to a display system with a powerful processor i.e, Android Smart TV, in that android application will be installed. That application will compare the images with already fed images and display tire strength and air pressure of the tires.

IV. WORKING

A. TECHNOLOGY USED

At first, the customers transfer the dent picture, the highlights of the dent picture ought to be removed. The innovation utilized here is augmented reality alongside Vuforia. Vuforia is a software development kit (SDK) for cell phones which is utilized to build up an expanded reality application. The procedure utilized in Vuforia is vision innovation it is utilized to perceive and follow planar pictures and basic 3D objects. Vuforia SDK bolsters both the 2D and 3D target sorts including 'marker less' picture targets, 3D Multi-Target setups, and a type of addressable Fiducial Marker, known as a VuMark. The figure represented below is a layout of Vuforia engine.

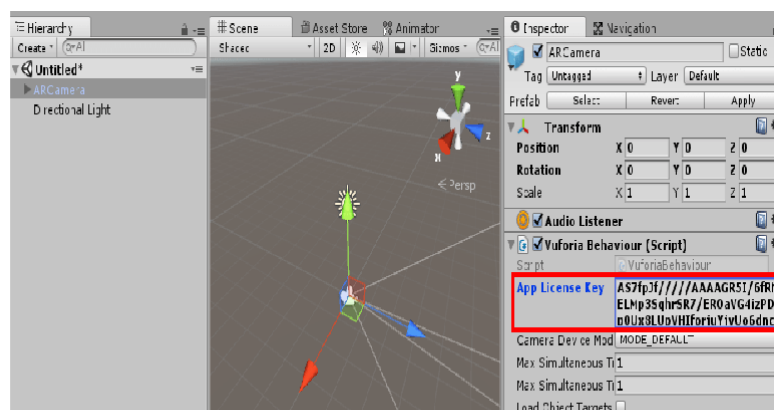
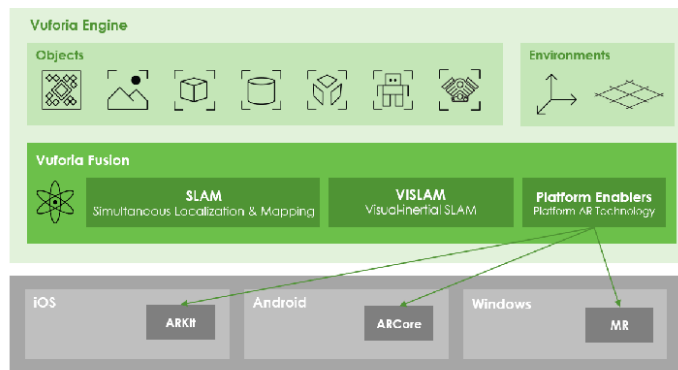
The Unity3D tool is used to develop the augmented reality application. In Unity it has a predefined library functions for AR and Vuforia. Vuforia is a cross-stage Augmented Reality (AR) and Mixed Reality (MR) application improvement

stage. It has powerful following and execution on an assortment of equipment including cell phones and (HMD) mixed reality Head Mounted Showcases. It incorporates with Vuforia to make vision applications and amusements for Android and iOS utilizing a simplified technique. A Vuforia incorporates both AR and VR bundle which is accessible on the Solidarity Resource Store. Vuforia additionally bolsters outsider gadgets, (for example, AR/MR glasses), and VR gadgets with back-confronting cameras, (for example, the Apparatus VR).

The below given is a sample licence key which is used to generate a augmented reality camera in Unity engine.

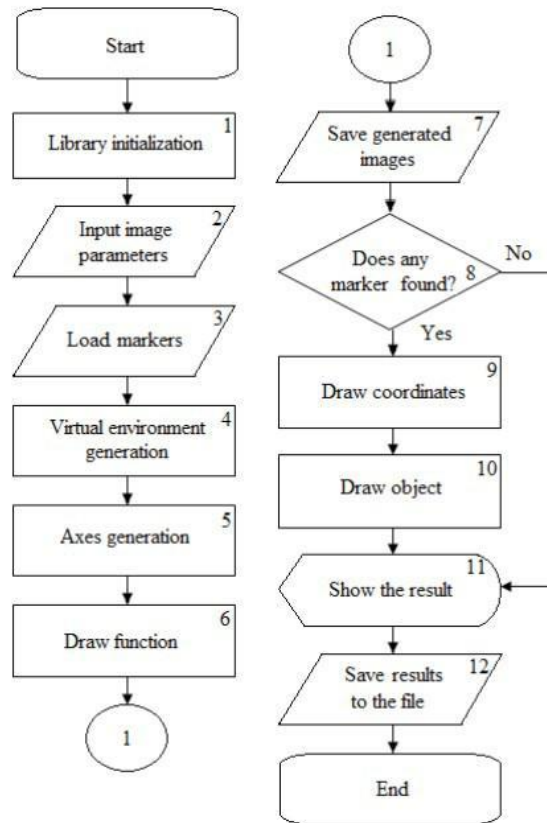
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expBHqxQNY+ZU/ilGBOGPxv4XoDklU3Hq8z7egxt
wRtV5/dbJb/StrAdFPE/a”
    
```



The above image is a screenshot of unity engine the red squared area indicates the app license key which is used to create the AR camera.

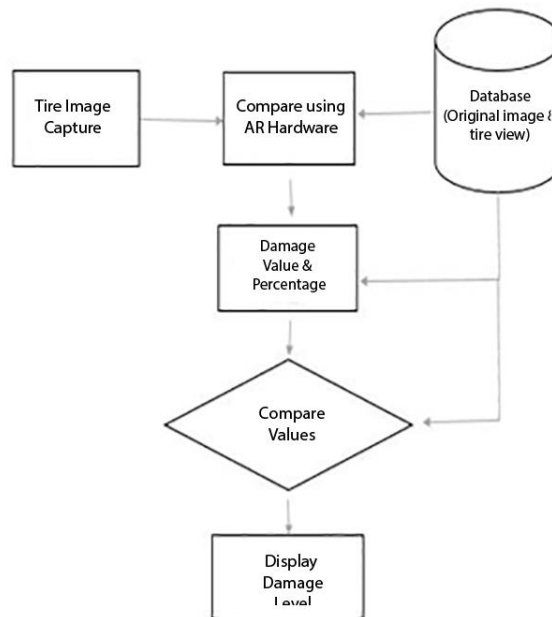
B. Flow Chart of Augmented reality workflow



C.AR Algorithm

- Step 1:** In the initial process the augmented camera has to set.
- Step 2:** After setting the AR camera the library functions for that camera has been included.
- Step 3:** In this step the AR camera seeks for input images or parameters to create an augmented 3D object.
- Step 4:** Then loads the marker value to make the coordinate points for the object in the image.
- Step 5:** After loading the marker, it creates a virtual environment.
- Step 6:** Then it gives the functionality to get interact with the 3D object generated by using AR camera.
- Step 7:** It draws the functional point on 3D object.
- Step 8:** Then saves the generated image.
- Step 9:** It checks further if any marker is found indeep scan of the image.
- Step 10:** If yes it again draws the coordinates.
- Step 11:** And then draws the 3D object.
- Step 12:** Displays the augmented 3D object
- Step 13:** Then saves the result and creates.

D. Architecture Diagram



V. CONCLUSION

The immense use of vehicles causes vehicle tire damages often in this modern world. Although there are similar applications exists for this problem no solution is found with the feature included in the proposed system. This paper recommends an approach where a client can transfer numerous pictures of a vehicle tire and to figure the seriousness and the damage level of the tire can be displayed in Augmented Reality.

VI. FUTURE WORK

This present framework assesses the damage level of the vehicle tire. Maximum possible that a tire can run can be found based on the present tire condition.

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