SPECIAL PROJECTION INTERFACING DEVICE FOR ENHANCED ROUTING

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ABSTRACT

To develop a system that projects the GPS route/ directions and other significant details such as the speed limit on a small part of the screen of the helmet or car wind shield.

This technology not only limits to Just Car windshield and bike helmet GPS projection but also extends to scope of developing advanced war helmets for Indian Military to provide enemy tagging just like advanced fighter planes and U.S navy ground units vision helmets.

This software requirement specification will have minute details of the project and will show it in both a bird's view and worm's view. The nature of job, utility and usefulness of the product has been well depicted in the SRS.

I. INTRODUCTION

In today's vehicle driven world, which mostly consists of automobiles such as cars and motor cycles, it becomes essential to have a device which integrates the simplest route directions and map of your destination. However having an android/iOS phone/tablet in your hand while driving/riding becomes risky and cumbersome for safety reasons as it leads the driver/rider to look into the phone repeatedly. Due to this problem,several accidents have taken place in many countries. The solution to this problem is to integrate the routes and directives to a place which is more accessible.

Encountering the problem, we have decided to develop a Machine that Projects the GPS route/ directions on a small part of the screen of the helmet or car wind shield.

II. IDEA OF DESIGN

Special Projection Interfacing Device for Enhanced Routing (S.P.I.D.E.R.) is an innovative idea of displaying navigation maps, safety warnings and custom user requirement applications on motorbike helmets and car wind shields.
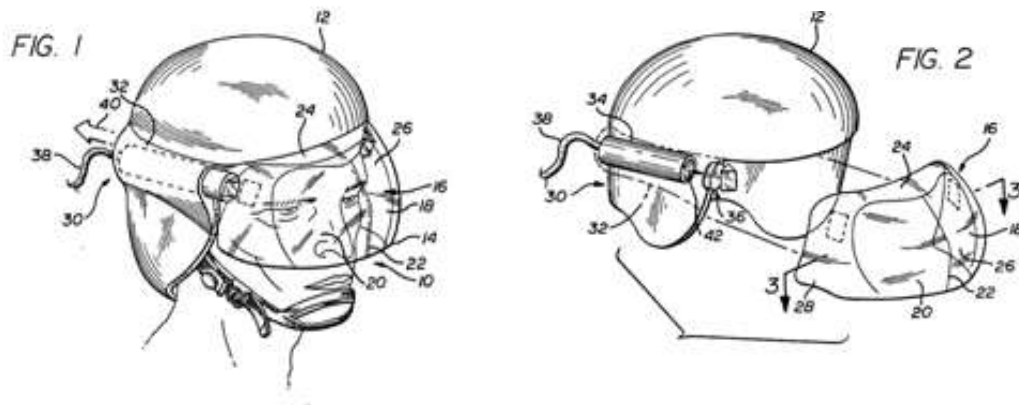
Fig. 1 and 2- Design of Helmet

III. DETAILED DESIGN FOR HARDWARE INTERFACE

Steps Involved:

- Connect your android device to PC via USB cable.

- Enable USB debugging on your phone.

- Start droid@screen.

- Start the navigation software- Sygic.

- Start the process of taking screenshots.

IV. droid@screen (ANDROID AT THE SCREEN):

droid@screen is a java based software that helps you to easily show the screen of an Android device on a computer/laptop (PC, Mac, Linux, ...) and then project the desktop using a LCD-projector. droid@screen is used for training/teaching and demonstration purposes.

V. HOW TO INSTALL AND CONFIGURE Droid@Screen:

[1] Install JAVA:

Droid@Screen is a Java program, so you need to have Java installed. Get the JAVA installer from

ORACLE and go for Java version 6 or later (currently its version 7).

[2] Install and configure Android SDK:

Droid@Screen uses one program (ADB – Android Debug Bridge) from the Android SDK package.

Download and install the Android SDK. And (write it down) in which directory you installed the SDK.

The installer should launch the SDK Manager at its last step. If that doesn't happen, just launch it yourself. There are plenty of things to download. But for Droid@Screen, the only thing you need is the Platform Tools. Choose that one and let the SDK Manager install it.

Create an environment variable named ANDROID_HOME and set its value to the installation directory of the Android SDK.

Type the Windows-key + BREAK (or choose Properties from My Computer). Choose Advanced Settings to the left. Then choose the Advanced tab and click the Environment Variables button.

[3] Configure your Android device:

If you haven't already, you need to install the USB drivers for your phone/tablet. Get the drivers from your vendor's support pages. That means support of Samsung, HTC, Sony, Motorola, etc.

You also need to enable USB debugging on your device. Open Settings, the choose Developer Options and finally, ensure USB Debugging is selected.

[4] Launch Droid@Screen:

Just double-click the JAR to launch the application. If you want to launch it from the command-line instead, type this java –jar droidAtScreen-1.0.1.jar

If Droid@Screen cannot find the ADB executable based on the environment variable you defined above, it will prompt you for the path. Just navigate to the installation directory of the Android SDK and then into platform-tools/. You should there see the adb.exe file (on Windows).

VI. THE CHALLENGE

Motorcyclists still need an effective navigation tool except the usual paper maps or touch-screen navigators. Using maps requires frequent stops; navigators distract the biker's attention and are not safe to be operated on the go.

There is a device that would perfectly meet the bikers' requirements but up to the present day only fighter pilots could enjoy its advantages.

Fig.:3- Designed Helmet

VII. RESULTS OBTAINED

Fig.:4   Fig.:5   Fig.:6

Fig.:7   Fig.:8

International Journal of Advanced Technology in Engineering and Science
www.ijates.com
Volume No.02, Issue No. 05, May 2014
ISSN (online): 2348 – 7550

- Fig.:4- It's an input image for a system on which image processing has to be applied. It consists of various unwanted elements which are we removing through image processing technique.
- Fig.:5- It's an output image consists of one of the desired path which we require for further processing. It consists of violet region of our interest.
- Fig.:6- It's an output image consists of one of the desired path which we require for further processing. It consists of yellow region of our interest.
- Fig.:7- It is also an output image consists of one of the desired path which we require for further processing. It consists of white region of our interest and it also showing the various other connected paths (highways, roads).
- Fig.:8- It's a final output image consisting of violet, yellow, and white path which are our desired region of interest. It does not contain any unwanted elements. Basically it consists of a path which is having a navigation mark on it(which will move when the user navigate it)

VIII. CONCLUSION

Our advantage over our present competitors is the cheap access of growing smartphones and android operating system usage on smart grounds as per present common Indian traffic requirement.

Success of Idea can be evaluated by feedbacks from citizens and Traffic Police Department of Various Locations from Prototypes.

It will decrease accidents of two wheelers by huge rate due to secondary sensors alerting them of high speed warnings, non-visionary i.e. out of field of view traffic coming from side or back at high speed and possible situation of collision and auto speed decrease as part of solution or user requirement.

Nevertheless it will open new gates of development for touch, speak and visualize navigation and application helpers even during natural disasters.

IX. FUTURE SCOPE

Competitive innovation in area of this development is Google glasses only, though it has been developed for U.S marines and various Countries Air-Craft in early time beings.

Our advantage over our present competitors is the cheap access of growing smartphones and android operating system usage on smart grounds as per present common Indian traffic requirement.

Google glasses cannot be practically worn in helmet on Indian roads due to bumpy roads and vast weather effects which is greatest advantage of this innovation.

Google glasses cannot be used with custom applications whereas this innovation design can implement/project every android app from play store and custom user requirement apps for advanced tasks like military enemy tagging , night visions , weather/news update, safety warning and auto break system with smart "probable collision" safety system.

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