"E" "I"-Hat

("Electronic" "Intelligent"- Helmet) *Electronic Head*
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Abstract—

The "e-hat" is all about reducing problems of a two wheeler driver that he faces during his long and boring journey. Problems such as tiredness, discomfort and sleepiness will be dealt with and reduced to much percentage .We can conclude that with this, the number of two wheels would increase in the market. But with the increase sales in the two wheels do not tackle the problems that a rider faces during his journey even with the most expensive helmet. The objective of this research is to tackle all those problems, come out with solutions and with a cross-collaborative effort bring them all up to one single device.

The Intelligent Helmet. It deals with the problems of the driver and intelligently makes his/her journey adventurous experience. This is an On the Go system offered by the Bluetooth headphones present in the helmet itself which would help the rider to get through his journey, doing all things on the go.

Introduction

The "iHelmet" is all about reducing problems of a two wheeler driver that he faces during his long and boring journey. Problems such as tiredness, discomfort and sleepiness will be dealt with and reduced to much percentage. So, to lessen all these problems my Team has introduced a device which can decrease the magnitude of the effectiveness of those problems. The Device of which there always was a need but it was never been discussed nor it was ever implemented. So we introduced " The Electronic Head ". This Device can actually decrease all those problems to a level which is more desirable than the existing one.

It is quite better than the existing ones because it is convertible. If the user don't link it with the mobile, it is simple protective gear, but if he does then it acts as an Electronic head too.

Objective:

This team aims to lessen all those problems through a meaningful technological device not through design tricks. It might be a very important product for all those who not travels such long distances but also suffers every second of it. * Through this the driver can actually access those features and can lessen the embarrassments which he suffers during his journey. Now, he won't have to worry, how

will he pass his time during the boring journey? * The Fire Fighters, Cricket Umpires and the Moto gp racers can overcome those problems, if all those devices are converted and inserted into a single device.

Source   of   the   idea :

" An idea is something that can change life".
                                                    :

When we come across the inventions of two wheeler engines and its innovations, we admire heavier engines and sporty designs but unfortunately all of this have not been successful enough to improvise the rider's problems when he travels long journeys. He goes through many problems such as embarrassment resulting into sleepiness, laziness and being extremely tired. These problems arise from the fact that he cannot access many things that a person in a car can. They   are
*Listening   to   Music   /   FM
.
*Attending calls   .
* Guiding him through unknown areas using Map   Navigation.

Fires are the man-made hazards. They can occur at any place, even at the most safe place. So, then we call the fire fighters for the help. But even they have many problems in rescuing people through it. They carry a microphone or a walkie-talkie and a torch enabled helmet with them. But still, they face a lot of problems when they help people.

*   Source   3
In cricket, both the umpires are such that they have complete knowledge of the game. In the middle of the field, they carry a walkie-talkie and a worthless cap. Now, these devices aren't enough t protect them from the leather ball or when they will have to communicate with each other or with the fourth umpire. Because they will have to continuously communicate with each other and side by side to ensure their own safety as well.

We come across the grandest event of motorcycle racing known as MOTO GP.

In this game many teams take part and in each team there are two players and a person to manually tell them their positions whenever they cross any lap. Through the whole race, they cannot communicate with each other nor can they understand coach's directions.

Scope:

Whenever a product is introduced in the market, it is made sure if there literally some scope for the product. So, Why won't there be? This product always had its needs but it has never been implemented ever before. It is a brand new concept and a beginning of new era in the innovation of the technology of the Helmets. Making this protective gear more innovative. Now, considering the increase of the two wheeler product and commodities presently and in the upcoming future, we conclude that there will be a huge increase in the demands of such product. Not only it has uses in long journeys but it can be used in other fields as well. Such as: * Moto gp races. -> In which there are many teams and each team has two riders. It can be used to communicate between the two. * Fire Fighters

-> Fire fighters use helmets to protect themselves in the fire, and they also use a walkie-talkie or a microphone to communicate between the instructors, so this can be of good use at those situations. * Cricket -> many a times when both the umpires have to communicate, it might act as a good means of communication. Moreover, it would act as a protective gear for them as well to save them from the hard leather ball trajectories.

Viability:

Viability of any product is calculated through three things they are Practical Viability, Industrial Viability and Commercial Viability. Practically because it can be designed and built. Moreover, it will be easy to use. Before starting the journey the user have just to link his Bluetooth speakers to his mobile and then play whatever he wants. He can access FM, attend calls. But for accessing the map navigation app, he will then has to set his destination initially and then he should select the voice enabled mode to guide him. Now he can access all those features and that too ON THE GO. Industrially because it's technologically advanced and it is easier to use, moreover it is a meaningful approach of reducing two wheeler issues. Commercially viable because it is pretty brand new idea that people will look upon as a new innovation, that always had a need but has never been implemented before.

Feasibility

This kind of innovational device is actually feasible.
What we have to do is insert or install two Bluetooth headphones in an helmet, without changing or transcending with the helmet designs. After inserting, we will have to link it with the mobile, something that everyone has.
After the process of linking, he can use it for Music/ FM, attending calls or even Map Navigation.
* In the case of Fire Fighters, a high intensity flash light can also be installed into the helmet itself. Now, It doesn't require much higher or some scientific sort of approach. It's a simple design and even simpler to implement upon.
So, technically it is Feasible.

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Working

The prototype has three inputs and as many outputs routed to and fro the P89V51RD2 Microcontroller respectively. The two sensors incorporated in the prototype i.e., LM35D temperature sensor and ADXL3 tilt sensor, along with the Global Positioning System (GPS) module comprise the input circuitry while the Peltier module, the Liquid Cristal Display (LCD) module and the Global System for Mobile communications (GSM) module form the output circuitry.

The LM35D temperature sensor senses the temperature in the area enclosed between the scalp of the rider and the interior of the helmet.
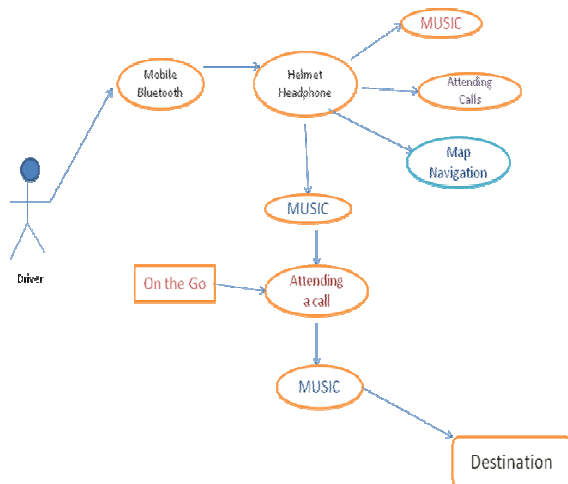

Analog output signals of the LM35D temperature sensor are converted into digital signals by the 0804Analog to Digital Converter (ADC) and are sent as input to the P89V51RD2 Microcontroller.
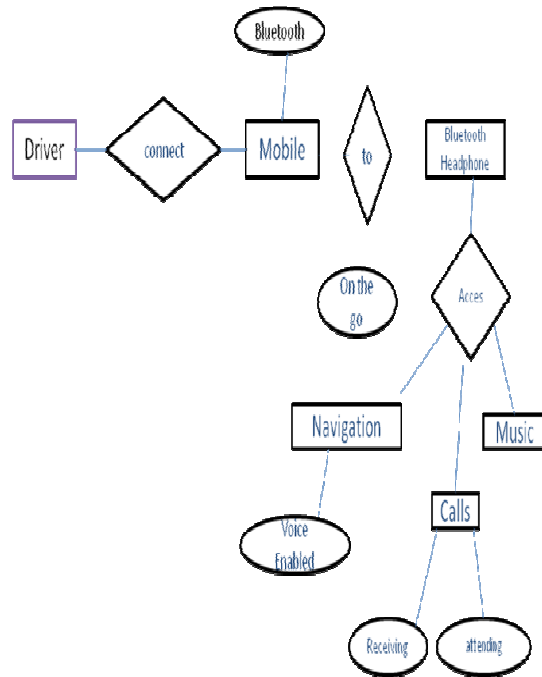
If the sensed temperature exceeds the desired pre-set temperature by the rider, the Microcontroller sends output signal through the BC 547 NPN Bi-polar Junction Transistor (BJT) which is used for amplification of the signal, which controls the switching of the TEC-12706T125Peltier module, which is responsible for creatin g comfortable temperature. The ADXL3 Accelerometer Sensor incorporated in the helmet senses shocks, if at all they occur, received by the helmet. Analog output signals of the ADXL3 Accelerometer sensor are converted into digital signals by the ADC0804 Analog to Digital Converter (ADC) and are sent as input to the P89V51RD2 Microcontroller. In the event of an accident when the magnitude of the shock pulse generated is greater than a pre-set value, the Microcontroller sends output signal through the BC 547 NPN Bi-polar Junction Transistor (BJT) which is used for amplification of the signal, which controls the switching of the TEC-12706T125 Peltier module, which in this case is made to reduce the temperature in the area enclosed between the scalp of the rider and the interior of the helmet to 22oC, which was found out to be the temperature that would favour the acceleration of blood clotting mechanism. During such an event, besides expediting the

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blood coagulating mechanism, the Microcontroller sends signal to the Global System for Mobile communications (GSM) module, which would send the precise location of the rider obtained from the Global Positioning System (GPS) module at the time of the generation of shock pulse, which is greater than the critical magnitude, in the form of a text message through a Subscriber Identity Module (SIM) card inserted externally to the GSM circuitry. The text message will be received by the SIM whose number is stored in the Microcontroller that gives the information about the precise latitude and longitude of the location of the rider. This entire circuit is powered through switching ON the limit switch when the rider wears the helmet.
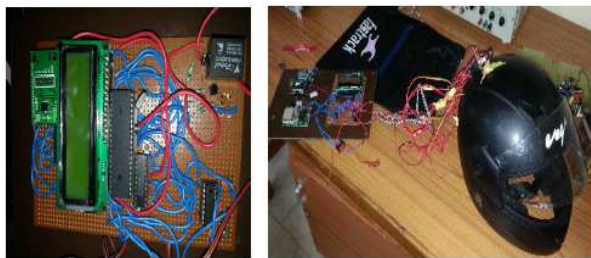
Economic Feasibility

Before buying a product, the consumer ensures whether it is in his budget or not. Since, it offers more comforts and features than the existing ones, so we can say it will be costlier than the existing ones but not that much which can't be afforded. For example: The basic function of a mobile is to communicate between your loved ones, but still people buy the phones which offers more and more features, irrespective of its price. This Product is not at all for any show off or to display one's superiority but to accomplish all the problems that were inevitable before. The product won't be depending on what kind of areas you go

through or what bike you are riding, but it makes sure that you have linked it with you mobile. Furthermore, if the user wishes to use it , he surely can but he don't he might not, but still he can buy it for protective measures which further adds to it's features. That is Convertible to both simple and complex function able helmets. Using the Basic Economic Law which states that: "When demand of a commodity increases its price decreases". Which is also its plus points.

Sellable

With all those Features, and such a beautiful piece of Innovation in the multitasking field, The ideas have never been shared and dealt with before. People will actually buy such kind of product, because it will not only reduce some inevitable problems but will also bring about pleasures during the rider's long, boring and tiring journey. Moreover, with such a great rise in the quantities of the two wheelers and the new technologies being implemented in the motorbikes, this device can easily cope up with those advances and deal all those problems. And what the user has to do is just link.

Expected Output

The needy people will buy such kind of product because it promises to solve their problems and that too with ease. With the increase of the two wheeler market, the demand will increase on its own pace. And with the increase in demands the prices will also decrease. Furthermore, more innovations can also take place within the device too which might not be done today. Such as: * Charging Mobile using solar energy by installing solar cell or little wind mill model. * Voice enabled system. * Cooling System in the helmet itself during summers.

And much more. So, not only this device has a good future with the two wheelers, but t is

also a source of endless innovations.

Problem Statement

As we all know that every brand in the market for vehicles, especially motorcycles have a function, advantages and sophistication of its own. Although progress is increasing, the safety of motorcyclists on the road is still not guaranteed. One cause of the accident or death among motorcyclists were not wearing helmets used by the correct procedures, for example, do not fasten the safety strap on the helmet and the helmet does not use the appropriate size. Because the accident rate for motorcyclists is increasing from year to year, an Intelligent Safety Helmet for Motorcyclist developed which inspired its security features for motorcycle riders.

Expected Results

As has been stated from various sources such as print media or electronic media, wearing a helmet is very important to improve the safety of motorcyclists on the road. Thus, the development of this project, expected safety campaigns undertaken to achieve the targeted goals in line with posters made to increase public awareness of the importance of road safety Malaysia especially for motorcyclists. It is evidenced by the expected outcomes of this project, in which a helmet strap installed, the contact will occur at the receiving circuit. Conditions in causing the recipient and Light Control circuit will be active. The next occurrence of contact on the receiver circuit can cause the motorcycle operation. Then, this project hoped will prevent riders from riding without wearing a proper helmet.

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