EMBEDDED SYSTEM BASED SMART BIKE

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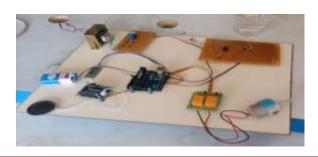
Abstract – *At present, the vehicle usage is basic necessity for everyone. Simultaneously, protecting the vehicle against theft is also very important. We make a path for the bike safety and control. For that, we introduced Face Authentication System **(Biometric system)**for the bike ignition. With that system, we provided the speed control system by using the controller device which makes the bike to run at a particular speed. At last, we introduced the signal identifier to detect the incoming call and its alert the rider by making a sound. By using our ideas from this paper we can avoid the bike theft and also reduces the bike accidents due to over speed and usage of mobile phones while driving.*

Key Words: *Face Recognition, Signal Notifier, Speed Controller, Bluetooth, Speaker, DC Motor.*

1. INTRODUCTION

Nowadays, the bikes are widely used by everyone in the fast moving world. But, they are not drive with safety precautions. Hence, we have made biometric system i.e., face recognition system to avoid the theft cases. By using this system, everyone has separate face authentication to ignite their bike engine. Along with this, we provided the password method to overcome the drawback of this system. Next, we introduced the speed controller device which is already programmed to run the bike at a particular speed. The motor gets connected to the accelerator of the bike to control the over acceleration. If the bikes gets over speed, it will be gets slowdown automatically.

At last, we also connected the signal notifier (detector) with this circuit for the advanced use to reduce the bike accidents due to the mobile usage while driving. In this method, the antenna detects the incoming call signal and makes a sound (or) voice to alert the rider. If the rider attend the call without stopping the bike, then the bikes gets slow down automatically.

2. EXISTING SYSTEM

At present the bike theft cases are common in this developing world. There are many ideas were developed to avoid the theft. Fingerprint system was existed but the people could not use this system efficiently. And also there are many disadvantages from that system. In the existed systems, the people can give the input to the module and it checking for the correct or saved data(which was upload in the ARDUINO). If it matches then it ignites the bike engine. But, it cannot be used by the other people(like friends, relations, neighbors).

Following that, the bike accidents are occurring due to the rash driving, over speed and lack of safety precautions awareness among the people leads to the high death rate. For that, GSM system was existed for the bike, but it does not reach the efficient level. The existed system was provided with the speed sensor and tilt sensor. But, it fails due to the atmospheric conditions and the messages are not send due to the signal problems.

The another problem arises for accident that is the people are driving the bike by using the mobile phone which the maximum death rate in India. The existed system was that using the mobile jammer which also affects the other people at the same location . The jammer cuts the signal of the neighbor persons too. So that we proposed a new steps for all these problems in a single unit.

3. PROPOSED SYSTEM

The proposed system is designed for the complete safety to the rider and for the bike to avoid the bike accidents and bike theft. This system based on the combined work of Arduino Controllers, Biometric system and Signal notifier. This system is used to overcome the disadvantages of the existed systems.

Security in today's world has become more advanced because of technology. In preventing thefts for instance, there are different kinds of authentication that are used to increase security features in different kinds of devices such as fingerprint, retinal, iris and face recognition. Among the types of security features mentioned, face recognition is one of the most sophisticated and secured. By using this device, the authorized person and also the X and Y persons (friends, relatives and neighbors). So that, it avoids the theft possibility and useful for **emergency purposes** too. It also

has the unlock system provided in built of the bike for the use of emergency time.

The speed control is made by the Arduino controller connected with the BLUETOOTH module by using the mobile app. The main notice is that the bike can run only by fixed range of speed. The bike speed can be control by using the Bluetooth which has the options to fix the speed ranges. The maximum speed can be fixed in the program used for ARDUINO and it makes the bike to run at that particular speed. The rider can not ride over that speed, if he rides, then the bike get slowdown automatically by the control of ARDUINO.

The incoming call can be detected by the signal detector using the antenna, led and speakers. The signal notifier is predict the incoming call signal and it notifies to the rider about the call. If the rider attends the call without stopping the bike, the bike gets slow down automatically.

From the above proposed system, there will not have any demerits and it is very useful for nowadays bike protection. This system plays a vital role in protecting the bike and the rider without harming others.

METHODOLOGY

This project was developed by analyzing the requirements and by fully understanding the problems. The solution was made by using advanced methods implemented for the next level to give an appropriate results.
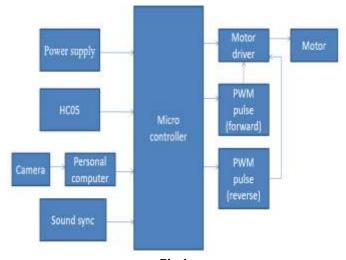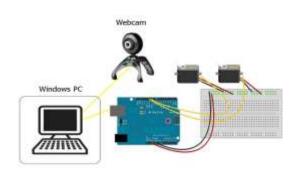

Fig.1

This block diagram shows the entire system for the development of the paper. This shows the total control is based on the micro controller (ARDUINO) . It includes the components are power supply, Bluetooth, camera, personal computer, sound synchronizer, motor driver, PWM and motor.

4. BIOMETRIC SYSTEM:

The biometric system has the many varieties for the safety precautions, from that we chose the face authentication system for the better advancement to the smart bike. By using this method, the device authenticate the registered (images) and ignites the bike engine. This can reduce the duplicate keys usage and theft cases. Along with this system, we provided the password (unlock system) to the bike for the emergency purpose usages. For the authentication, we used the MATLAB for the image processing to store the images of owners and their family members.
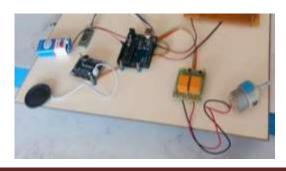

The authenticated image is used to turn ON . If the wrong image is detected, the bike will not start. To turn on for emergency purpose by any other person (known by the authenticated person) the unlock system is provide with the use of keypad numbering system.

5. SPEED CONTROL SYSTEM:

In these days, people are driving at a high speed in a normal roadways which causes the accidents due to the loss of speed control by the riders. To avoid these accidents, we make a solution to control in a previous set up of the device. So that, we used the Bluetooth to set the required speed which is applicable for the normal roads. To operate the Bluetooth function , we have to install the **ARDUINO BLUETOOTH CONTROLLER** in a mobile phone. From this, we connected the speed control device with the mobile phone through the Bluetooth. We connected the DC motor with the accelerator which controls the speed by restricting the over acceleration. Hence, the bike will run at a speed which is the range we programmed in Arduino board and it is controlled by using the mobile app. The bike will run at a constant speed and it will not run over the range which we fixed in a program.

6. SIGNAL DETECTION SYSTEM:

The last system is to prevent the bike accidents due to the usage of mobile phones while driving.

The signal notifier provided here is to detect the incoming call for the rider's mobile phone. It detects the signal through the Antenna and alerts the rider by making a voice through the speaker which we connected along with it. Also, it blinks the LED light to alert the rider. For this, we provide 5V supply to the notifier through the battery. The voice recorder is used to record the sound or a voice to alert the rider.

FUTURE WORK

The future work is that the bike will attached with **documents** which is required for the official checking. The documents included that are license, RC book, id card ,etc., This project is on the process for the future enhancement. It will be very useful for the future reference. This paper can be implemented by adding the DISPLAY on the bike and adding more features like GPS, GSM, documents, etc.

CONCLUSIONS

This study concludes that to achieve the prevention of crashing of the system, the face recognition system for the authentication of engine ignition acceptance test #1should have an indicator to know if the program is executed successfully.

Thus, the paper concludes with satisfied result i.e. the bike is completely work with safety precautions and it is very useful for the bike rider and also for the pedestrian by avoiding the accidents.

REFERENCE

[1] Amit Saxena, "IGNITION BASED IN FINGERPRINT RECOGNITION" published in International Journal Of Scientific Research and Management studies (IJSRMS).

[2] Prasant Kumar, "TWO WHEELER VEHICLE SECURITY SYSTEM" International Journal Of Science and Emerging Technologies

[3] He Z, Ou Y, Yuan J." Research on the Torque Dynamic Distribution Algorithm of In-Wheel-Motor-Vehicle".