

Two Wheelers Security: A System for Smart & Feature Phone Users to Prevent Thefts

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Abstract— In this era security is the most important concern in every aspect. And at the same time technology is getting integrated for the same. This has also left Automobile industry untouched. In today's world nearly every person owns a vehicle. And with a big monetary investment comes a need of a reliable security. This has led to the development of the system to track the theft or prevent the theft of two wheeler vehicles. The system has a GPS and GSM module that alerts the user of theft probability through SMS and call. But the system is only designed for Android OS i.e. for smart phone users and interaction is only limited to user. Which arises a loophole. I.E. if the phone is switched off, user will be unaware of his vehicle's security. The proposed system overcomes this by involving a system that will be controlled by Police as well as users of feature phones. Also the system includes a sensor which will measure the distance between the object and the surface to prevent the vehicle theft by lifting.

Key words: Two-Wheeler, Vehicle, Safety, Feature Phone, GPS, GSM

I. INTRODUCTION

According to a statistics, number of motorcycle stolen nationally in 2014 is 42,856^[1]. This shows how security and prevention of a vehicle theft is very important in current scenario. Thus a system for Android phone users was introduced that tracks and prevents theft of the user's vehicle which makes use of the GPS to track the location of the vehicle and GSM to alert the user by sending him a SMS or by calling him depending upon the situation.

II. CURRENT SYSTEM ^[2]

First, Current security system makes use of the SMS to stop the vehicle theft as it is an inexpensive & reliable way of transferring data.

Its working is as follows:

- When the intruder steals the bike and starts its engine, the embedded GSM module sends the SMS to the owner of the vehicle that your two-wheeler is running.
- When the owner receives the SMS, he can stop the vehicle by sending an SMS to switch off the vehicle engine.
- When the embedded system receives the SMS, it will verify the number of the received message to ensure that only the owner's number can access the security system.
- When the number is verified successfully it obeys the code sent through SMS i.e. it stops the engine and the theft is prevented

Thus, the interaction is directly between the owner and the system & he himself is able to prevent the theft.

But to make this process work requires an android phone i.e. only the smart phone user can access this security system and can prevent his two-wheeler from getting theft.

This system also has GPS which is integrated with GSM module through which the owner can track the location of the two wheeler.

Global Positioning System is used to track the location of the two-wheeler to which it is attached and record its position.

Through GPS we can calculate the distance and will be able to locate the exact position of our two-wheeler.

Thus the integration of GPS into the vehicle's engine has proven very beneficial to prevent the theft.

This system also requires GSM SIM 900 as it provides excellent performance for data and SMS with low power consumption.

A. Drawbacks

- Only the smart phone users can use this system. What if the owner of the vehicle has a feature phone?
- The vehicle can be tracked only when its engine starts, suppose we want to prevent the theft even before the engine starts i.e. a scenario where vehicle is picked up by thieves then there is no provision for that.
- If the user's phone is switched off or out of range then how he will be able to prevent his vehicle from getting stolen.

III. PROPOSED SYSTEM

This system overcomes above mentioned problems of existing system. Now, not only the smart phone users but also the feature phone users can prevent the vehicle from getting stolen.

This proposed system is explained in following 3 scenarios:

- 1) If a person has a feature phone instead of a smart phone.
- 2) If the phone is switched off or not in a coverage area.
- 3) If the system attached to the vehicle gets tampered with.

A. If a person has a feature phone instead of a Smart phone

Even though people are opting for a Smart phone, number of feature phone users in our country is not negligible. Therefore they are being kept deprived of the current system.

The proposed system overcomes this problem by using the SMS system available in the feature phone.

Its working is as follows:

- 1) When the intruder moves the handle of the two wheeler, the GSM module & the GPS system which is integrated within the engine gets activated and sends

the SMS to the owner which will contain the message "MOVEMENT".

- 2) When the intruder tries to start the engine, the GSM modem calls the owner that your two-wheeler is running i.e. owner will get a call alerting that its two-wheeler is in danger. At that point of time he will come to know that something is fishy with his vehicle and he will send a code, "OFF" through SMS.
- 3) When the system receives the SMS it verifies the user's number with the number of received message to ensure that only the owner can access the security system.
- 4) After the verification of the owner's number, it follows the code sent through the SMS i.e it stops the engine and intruder will not be able to carry the user's vehicle further.

B. If the phone is switched off or not in a coverage area

In case the owners phone is switched off or out of range then the system first will send the message to the owner if it doesn't get any response within a timeout period or if the message will not get delivered then it will inform about the theft to the nearby police station with detailed information including the location, magnitude, latitude etc. So that the police can catch the intruder/s and prevent the theft.

This will work as follows:

- 1) This system will be efficient to track location of the nearby police station by the GPS installed in it. Thus even the owner's phone will be switched off, an alert message to the nearby station will be sent.
- 2) The location of the nearby police station which is tracked by the GPS will be sent to the server by the system which in turn sends the police station number to the system and then the alert will be sent to the police's system using the system installed in two wheeler.

Now, there might arise a situation where user might want to turn off the system for any reason. In this case following procedure will be followed:

- 1) He will call the system engineers and ask them to shut down the system.
- 2) Upon verification of his identity as an owner, the system will be shut off and an alert will be sent to the police about it.

This arises the following scenario i.e. intruder might want to shut off the system.

C. If the system attached to the vehicle gets tampered with

There is a possibility that this system attached to the vehicle can be tampered by the intruders so that the alert will not be sent to the owner or to the police and will allow the intruder to steal the bike.

The procedure in this scenario is as follows:

- 1) As soon as the sensors of the system will detect tampering activities it will send an SMS to the user.
- 2) If the user's phone does not send the delivery report it will send the alert to the police's system and the same procedure will be followed mentioned in scenario B.
- 3) In case of the SMS delivered to the user, if the user sends back the message as "YES" the system will shut down. Else it will be considered as a theft activity.

IV. CONCLUSION

Thus the proposed system not only gives the advantage of the system to Smart phone users but also to the feature phone users. It also includes the police which makes the system more secure. Also it monitors the tampering activities making it more robust.

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