

# Smart Two Wheeler Side Stand Control System

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**Abstract-** In today world two-wheeler vehicles plays a very important role in our life. It is used for travelling from one place to another place. So it is very useful and also responsible for causes of some minor and major accident because of forgetting to lift off the side stand. Side stand plays a very important role while the vehicle is in the rest position. Due to this, it is very important to prevent the rider from this condition which happened many times, which may avoid by using automatic side stand mechanism in vehicles. In automatic side stand the simple mechanism is used for lifting the side stand automatically while the vehicle is at the start or stop condition with key ignition and wheel rotation .To generate the electrical power from the rotation of wheel and store in the battery. The power saved is used for the bike head light with the contrast and brightness based on the weather conditions.

**Keywords-**side stand , power generated, weather conditions

## I. INTRODUCTION

In all over world everywhere motorcycle are used. The side stand plays major roll while the vehicle is in rest position. But it has some disadvantages takes place as while the driver starting the motorcycle, there may be possibility of forget to release the side stands this will caused to unwanted troubles. This is a new type of side stand which is automatically retracting the side stand through some mechanical and electronic arrangement. In this system microcontroller, speed sensor, dc battery is used. Through the speed sensor, sensor senses the rotation of the wheel and sends the signal to the microcontroller which is actuating the dc motor which is caused the disengage the stand from the road.

A motorcycle side stand is nearly universal method of allowing a motorcycle rider to park his vehicle easily. If this stand is in the park position while the motorcycle is ridden through left turn a serious hazard exists. A new type stand side stand which is automatically side stand is invented to prevent such type of accidents.

The side stand system retrieves automatically if the rider forgets to lift the side stand while moving the bike. It works based on the working principle of the two wheelers. Every bike transmit the power from the key ignition and rear wheel. When the key is switched on, the side stand is retrieved automatically in the two wheeler. The rotation of the wheel generates the power and stored in the battery. The generated power is used to glow the head-light due to the weather conditions.(i.e. morning and evening time). The working of the automatic side stand control system is based on the three conditions are :

- Key Ignition- On State
- Key Ignition- Off State

In the condition of the wheel rotation the side stand will retrieves automatically. Then the key ignition is removed from the bike and the side stand is come to rest position. When the key ignition is off and the wheel rotates in the sloping area in this condition the bike stand is retrieves.

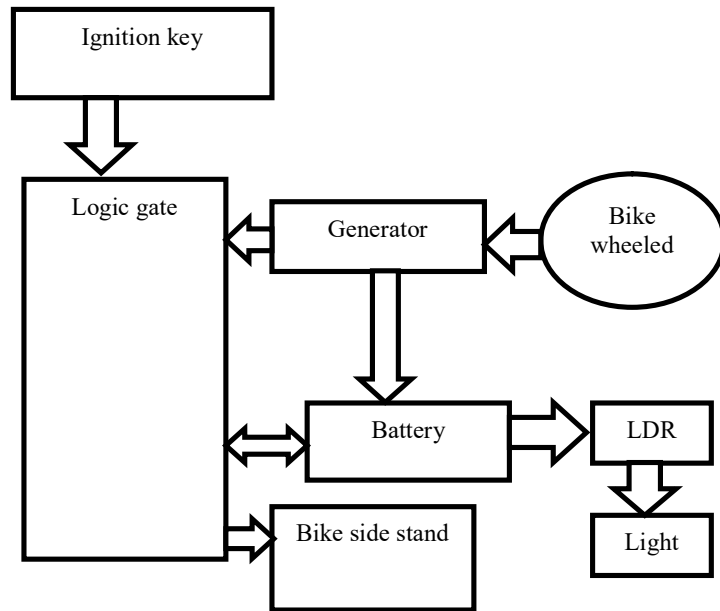


Fig.1- Block diagram of two wheeler side stand

## II OBJECTIVE

The main objective of our project is to provide a safety measure in bikes to avoid unwanted accidents and damage caused by not lifting off the side stand by providing automated side stand lifting system. Here we propose an idea for automatic side stand which is completely mechanical and electronic circuit and without using any external power.

## III SCOPE OF PROJECT

In future, it is applicable to all type of vehicle whether it is costly or cheaper bike. In future there is also some advanced modification is possible to like on the basis of the sensor. In this project, we operated mechanism of lifting off the stand in the very smooth way

## IV COMPONENTS

- Battery
- DC motor
- Switch (key)
- Side stand

### 4.1 BATTERY

A 12-volt dry cell rechargeable battery is used for electrical supply to the motor which is connected to side stand. A dry cell uses a paste electrolyte, with only enough moisture to allow current to flow.

### 4.2 DC MOTOR

It converts direct current electrical power into mechanical power. The speed of the motor is counted in term of rotation of the shaft per minute. Dc motor is designed for two-speed operation. It consists of three brushes namely common, low speed, high speed. Two of the brushes will be supplied for a different mode of operation. The DC motor does not oscillate back and forth, it rotates continuously in one direction like most other motors. The rotational motor is converted to the back and forth wiper motion by a series of mechanical linkage. This type of motor is called a gear head or motor ends DC motor. It has the advantage of having lots of torque. This DC motor works on 12-volt DC battery .

### 4.3 SWITCH & SIDE STAND

A switch used in our project is to lift off and release the side stand. This switch is same which is used in the bike for starting ON/OFF purpose. So it is not an additional component.

A Side stand is a device on a motorcycle that allows the bike to be kept upright without leaning against another object. A kickstand is usually a piece of metal that flips down from the frame and makes contact with the ground. The location of automatic side stand is just middle of the vehicle on a left side of the bike from the rear.

### V SOFTWARE RESULTS

The software results of smart two wheeler side stand is simulated with the help of Proteus8.0 program. The smart two wheeler has three conditions are

- Two switches on condition
- Two switch is OFF condition
- One switch is ON and one switch is OFF

By using these conditions the results are obtained with the help of NAND gate.

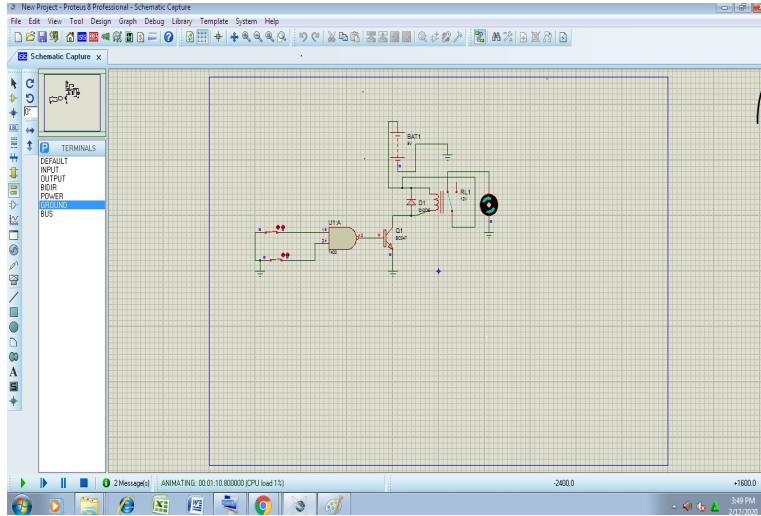


Fig 2-Two switch on condition

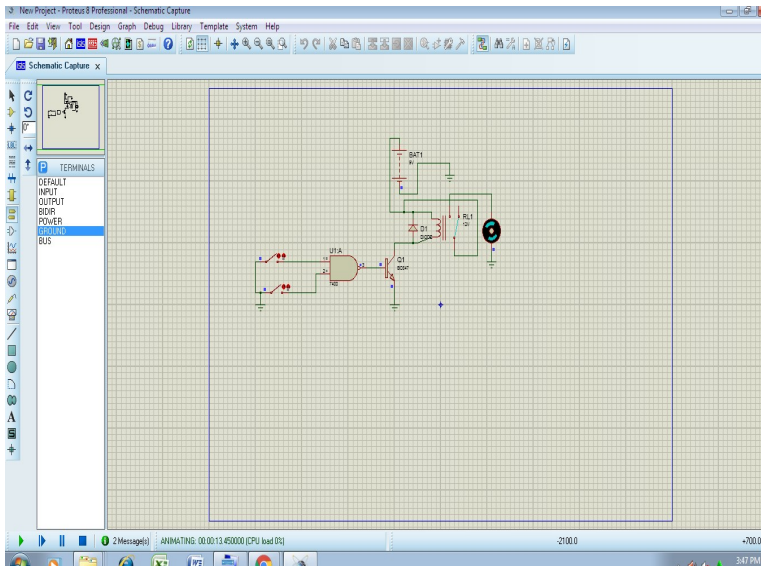


Fig 3- Two switch is OFF condition

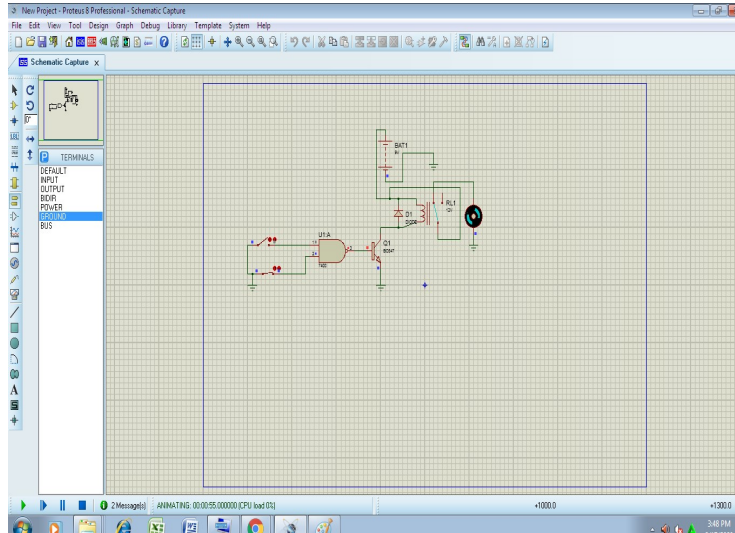


Fig 4- One switch is ON and one switch is OFF

### VI EXPERIMENTAL RESULTS

From the Fig.5 shows that the two wheeler side stand is in resting position. In this position the key ignition and wheel rotation is off condition.



Fig 5- Two wheeler is off condition (key and wheel )

From Fig.6 shows that two wheeler side stand is automatically removed due to the key ignition is in on condition (starting condition).



Fig 6- When key is on condition

From the Fig.7 shows that the two wheeler side stand is removed automatically and the wheel is rotated and the power is generated and the stored power is used for the external used for head light conditions. The head light will glow due to the weather conditions



Fig 7- Key is on and wheel rotating

From the Fig.8 shows that the smart wheeler is in sloping condition. In this condition some of the users will off the key ignition and wheel is rotated. Due to this wheel rotation the power is extracted and saved in the battery. The power is used for the external purpose.

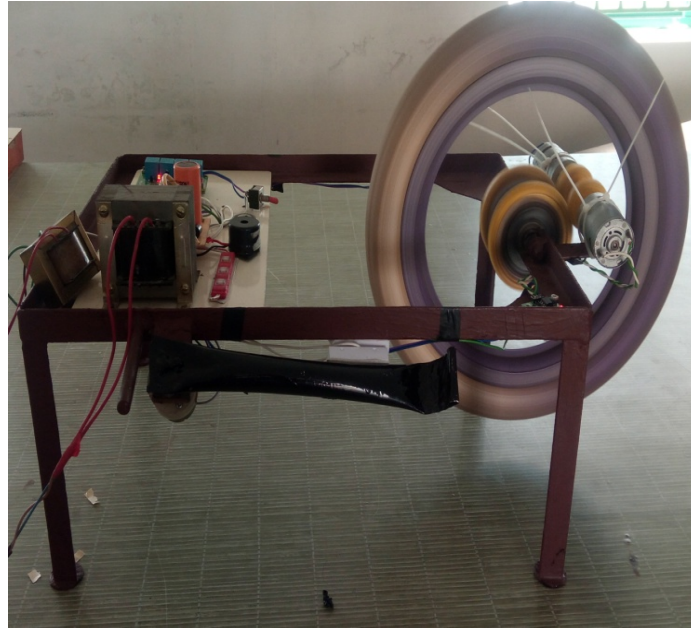


Fig 8- Sloping condition

## VII CONCLUSION AND FUTURE SCOPE

Smart side stand control system will definitely good retrieve system. Since the setup is compact is does not affect the performance of the vehicle. Because the power is obtained from the wheel rotation of the two wheeler. The power is used to glow the heed light due to climate conditions. In smart side stand system is automatically retrieve due to the ignition and the rotation of the wheel is designed and the results are obtained In future scope, the advanced controller and IOT without human is including in the smart two bike control system. Then the safety measures of persons to avoid the accidents

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