iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** II **Month of publication:** February 2023

DOI: https://doi.org/10.22214/ijraset.2023.48995

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue II Feb 2023- Available at www.ijraset.com

Design and Fabrication of Automatic Side Stand for Two Wheelers

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Abstract: ***Existing bikes have a system of beeping sounds when the side stand is in the vertical position. But this project's purpose is to make side-stand automatic and aesthetically pleasing to look at. So, it is designed as an automatic side stand for motorcycles. The project we develop the motorcycle side stand, slide automatically. For this purpose, automation uses the motorcycle ignition system to complete the electronic circuit such that when a person starts the ignition system using the ignition key, the side stand will immediately be in a horizontal position. The whole system works on an electronic circuit in the motorbike with the help of electronic components such as servomotor and Adriano. We used the microcontroller is an Adriano circuit and the motor is a servomotor for automation purposes using the Adriano programming. Whenever you turn on the key, the signal of position angle goes to the Adriano board. From the Arduino, a signal in the form of voltage comes to the servomotor. Finally, the side stand rotates at an angle which is programmed in software for the servomotor.***
Keywords: side stand, servomotor, microcontroller, battery, connecting wire

I. INTRODUCTION6

The most common vehicle used for transport is the two-wheeler which is always the cause of accidents due to their fragility. Among the following reasons of causing the accident, i.e., exceeding the speed limit, violation of traffic rules and side stand position, the vertical position of the side stand of a motorcycle is the most common reason for the accident. Hence, we have proposed to design a modern bike with an automatic side stand, which will lift the side stand immediately after the rider starts his bike. In this project, we have used an already installed bike starter, a 12-volt two-wheeler battery, and a side stand the servomotor and Adriano board. According to the starter's switching, the microcontroller, which is an Adriano circuit, takes the input and then operates the mechanism of the side stand to lift horizontally or vertically. Thus, on starting the bike's ignition system, the mechanism gets activated, and as a result, the side stand is operated by an electronic circuit lifted horizontally. On turning off the motorcycle, the mechanism senses the stoppage of the battery and the side stand moves to a vertical position.

II. LIST OF COMPONENTS

The following components are required to fabricate the automatic side stand for all kinds of two-wheeler:

1) Battery
2) Servomotor
3) Ignition Key
4) Microcontroller (Adriano)
5) Side stand
6) Aluminium flange coupling
7) Metal Frame

III. FABRICATION PROCESS

The fabrication process starts with a connection of 12v battery used in vehicles is connected to Adriano board. The board contains Adriano code that explains, when the positive signal from the ignition key is sensed by an Adriano board, that the motor should rotates to 90 degree upwards in a rotary motion. When the negative signal from the ignition key sensed by an Adriano board that the motor should rotates to its original position. This is the Adriano code encrypted in the Adriano board. The connection from one terminal of the Adriano board is connected to the ignition key, another end of the ignition key is connected to the one terminal of the servomotor, the another terminal of the servomotor is connected to the Adriano board. Now the circuit loop is enclosed. The stand is connected with the motor by using an aluminum flange coupling which has less weight and less cost. It is sufficient enough to connect stand and servomotor. The metal frame is fabricated and connected motor & stand is mounted on the frame.

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IV. RESULT AND DISCUSSION

Initially the program is coded in the Adriano board. The code specifies that , when the ignition switch is in on position the positive signal is transmitted through wires and the signal is sensed in microcontroller as input and then the command is transmitted to the servomotor to rotate 90 degree horizontally in rotary motion(clockwise direction). when the ignition switch is in off position the negative signal is transmitted through wires and the signal is sensed in microcontroller as input and then the command is transmitted to the servomotor to return back to its original position ,ie come back to its vertical or rest position(Anticlockwise direction. An aluminum flange coupling and the side stand is connected using brazing operation. The whole setup is mounted on the metal frame. It is an working model

An 5v adjustable resistor is used to convert the 12v power supply to 5v .The Adriano board has an efficiency to withstand of 5v,but the source produces 12v.To reduce the source voltage to 5v, an adjustable resistor is used. It improves safety of the driver. The system provides greater convenient for the user. The construction occupies less number of space .It does not affect the design of the two-wheeler. It has high efficiency. The source for the circuit taken directly from the bike battery. This project can be implemented in all two-wheelers.

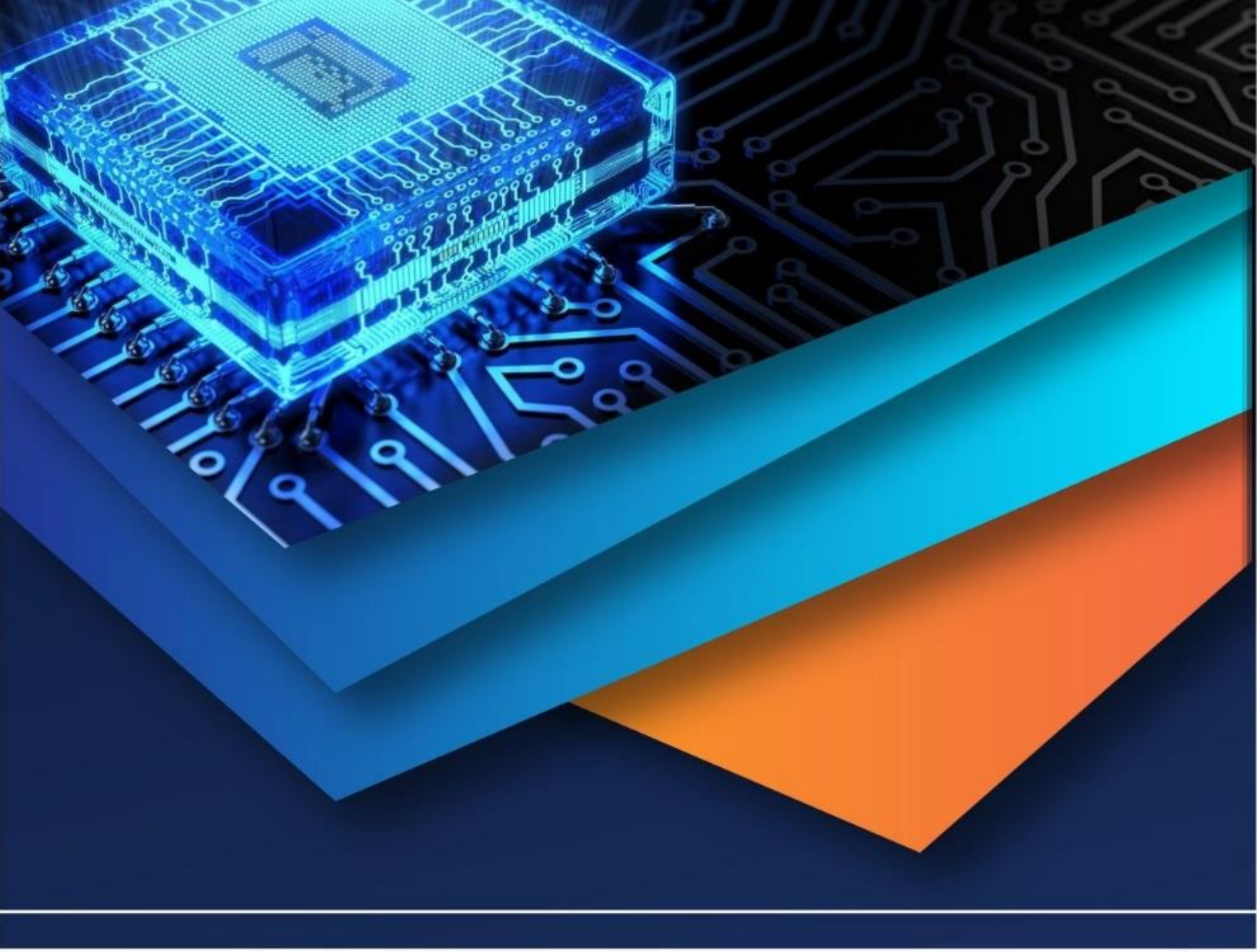
V. CONCLUSION

This work is proposed to design and fabricate "Adriano Based Automatic Side Stand using servomotor" that can drastically reduce accidents because of forgetting to lift up the side stand. Our model work is more efficient considering all the research that we have done before. Furthermore, due to the use of an electronic circuit, the side stand will not cause any problems with the motorcycle.

REFERENCES

[1] Pintoo Prajapati, Vipul Kr. Srivastav, Rahul Kr. Yadav, Rampukar Gon, Pintu Singh, and Mr. Sandeep, "Sprocket Side Stand Retrieve System", .
[2] Raj Reddy, "Sprocket Side- Stand Retrieve System", International Journal Of Engineering Research And Technology, 2015
[3] Shubham Bansode, Suraj Anpat, Ghuge Balaji, Tikone Sagar, Prof. Ghodke R.M., "Automatic Motor-Bike Stand Slider," International Journal for Scientific Research and Development
[4] Gawande M, Ulhe M, Kewalramani T, Sautkar S, Gawande P and Deshmukh T Automatic Side Stand and Foot Rest Retrieval System
[5] Aswatha A K, Yakin Y, Malekar 2016 Two-Wheeler Vehicle Security System Using Arduino National Conference on Sustainable Emerging Intelligent Technologies
[6] Muralidharan B and Pokharel R 1991 Automatic Side Stand Retrieve System Indian Journal of Research 2250
[7] Afrin S K, Hewitt and Mohammed Salman 2016 International Journal of Advanced Research in Management Architecture Technology and Engineering 2 6
[8] Leo Louis, "Working Principle of Arduino and Using it as a Tool for Study and Research", International Journal of Control, Automation, Communication and Systems (IJCACS), July 2018
[9] Amirul Syafiq Sadun, Jamaludin Jalani and Jumadi Abdul Sukor, "A Comparative Study on the Position Control Method of DC Servo Motor with Position Feedback by Arduino"
[10] Ecker H 2015 Motorcycle accidents – case studies and what to learn from them Vienna University of Technology Wiedner Hauptstr
[11] Krutika Naidu 2015 Advanced security and alert system for two wheelers International Journal of Innovations in Engineering Research and Technology

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