Essay: A programmed automatic whiteboard eraser

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Theoretically the undertaking intends to propose a whiteboard eraser that is extremely proficient and just erases hints of lines on the board, which are regarded important to be deleted. Our framework utilises an inventive approach through which the bi-axial duster intelligently follows lines and eradicates those lines as it were. It can be utilised for part and additionally full whiteboard cleaning. Some of the time we require just a couple of lines cleaned, at such circumstances it just deletes those lines associated and leaves the lay on the load up. The robot is a little vehicular framework coordinated with motors and a Tx-Rx framework that remotely controls the situation of the duster and just rubs the lines once set on them. The automated framework utilises a 8051 family microcontroller circuit to accomplish this. The controller peruses the information perusing and continually works the motors with a specific end goal to accomplish the coveted

cleaning. A Bluetooth remote takes into account manual control of the automated vehicle and exchanging as wanted remotely. In this manner the framework accomplishes an insightfully mechanical whiteboard eraser robot.

INTRODUCTION

A programmed whiteboard eraser is a gadget that is for the most part used to clean board consequently with the assistance of an eraser mounted on a bi-axial system. By the utilization of this programmed whiteboard eraser we can spare time and vitality. A gadget for consequently deleting a whiteboard wherein the eraser is mounted for longitudinal as well as horizontal movement on the whiteboard and has motors mounted subsequently that are mechanically interconnected to a drive gathering for delivering the development of the eraser in an eradicating activity. This adds to new and helpful enhancements and all the more especially to a contraption whereby whiteboards can be cleaned in a simple and advantageous way. The foremost question of the present programmed whiteboard eraser is to give a connection to whiteboards as a power driven eradicating contraption, which can be set in activity by the toss of a switch, along these lines taking out the drudgery of physically cleaning whiteboards. The earlier whiteboard has no programmed cleaning capacity, an educator sits around idly in composing and eradicating, and the utilization isn't perfect. The undersaid show gives a programmed whiteboard cleaning framework comprising, an electric whiteboard eraser, and a delicately secured whiteboard. The programmed whiteboard-cleaning framework is described in that the delicate secured whiteboard, which can move effortlessly in this way cleaning the board. The structure is straightforward; the utilization is helpful, perfect and clean; and the impact of sparing time is great. Our proposed technique comprises a whiteboard eraser that is proficient and just eradicates hints of lines on the board. Moreover, a remote Android application considers manual control of the mechanical vehicle and exchanging as wanted remotely. Moreover, we expect to set the framework to intermittently work and delete the entire whiteboard.

LITERATURE SURVEY

'Automatic Duster Machine' International Journal of Emerging Technology in Computer Science and Electronics: Automatic duster machine is a machine, which can clean a whiteboard or chalkboard naturally with a press of a catch. The machine can work in three selectable working modes. In the primary mode, it cleans the left half of the board. In the second mode it cleans the correct side of the board. In the third mode it cleans the entire zone of the board. This machine utilizes two stepper engines to move the duster in horizontal (x-axis) and vertical (y-axis) bearings to cover the entire whiteboard territory. Two direct motors are utilized to lift the duster up or down/ right or left on the whiteboard.

'A Review of Automatic Blackboard Cleaning System' International Journal of Engineering Technology, Management and Applied Sciences: A programmed writing board duster is a gadget that is for the most part used to clean board naturally with the assistance of duster. By the utilization of this duster we can spare both time and vitality. The vital protest of the present programmed board duster is to give a connection to writing boards as a power driven eradicating contraption, which can be set in activity by a switch, in this manner dispensing with the drudgery of physically cleaning chalkboards.

'Automatic White Board Eraser': The starting stage consolidates the switches, which is used for course of the duster with the encoder IC keeping in mind the end goal to encode the given contribution by the customer into proper setup for transmission. Taking the guideline rationality to use DC motors to begin advancement of shaft and microcontroller to control the improvement of the framework.

PROBLEM

In the conventional whiteboards for erasing content on the board human interface is necessary, as we know the ink used in white board being xylene is injurious to health it causes irritation of skin, difficulty in breathing, hence it's not advisable for us to have direct contact with the same. In classes with large boards, it may not be possible for a teacher/person to erase the corners inaccessible to him, for the case we intend to provide the board with a remotely controlled automated system, which eliminates the need for personal intervention. Currently the electric whiteboard eraser is Unidirectional, it erases the board entirely at once, and moreover it cannot be erased in specified areas of the board.

SOLUTION

We propose a whiteboard eraser that is exceptionally proficient and just deletes hints of line on the board, which are considered important to be eradicated. An Android App takes into consideration manual control of the tomahawks and exchanging as wanted remotely. The solution for the existing system is a Bi-axial eraser system, which is remotely controlled via transmitter-receiver system along with android app. Also the whiteboard is virtually divided into blocks, whereby the eraser quickly reaches the designated block upon the click of a number this is done for speed and efficiency. The chassis is a Pulley based eraser system for quicker speed and power saving.

Abbreviations and Acronyms

Tx- Transmitter

Rx- Receiver

SYSTEM DESIGN

The diagram below shows the structure of the system. Components are arranged according to the Block diagram. An AC Power Supply is given to the transformer which step downs the voltage to 5 V AC and then the bridged rectifier converts to 5V DC. This is required to run the microcontroller and the Bluetooth module. A separate transformer is used to power the two wiper motors which are controlled by the Relay switches module, the relay module used as electromagnetic switch optocoupler used to electrically isolate wiper motors and microcontroller. The Bluetooth module is initialised using the serial communication established between the Android App and the bluetooth. Required direction is given into the App, the serial communication undergoes between the phone and the HC-05 bluetooth module thereby the Microcontroller drives motors in the requisite directions. Relay Module used as Electromagnetic switch Optocoupler used to electrically isolate wiper motors and microcontroller.

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Fig 1: Block Diagram

ALGORITHM

The programming is done to execute the erasure operation of the system. The flowchart of the algorithm is discussed below:

Fig 2: Working of Algorithm

When a signal from the remote or the android app is received, it is then processed in the microcontroller and accordingly a suitable signal is sent to drive the two motors in the desired directions. The automated framework utilizes a 8051 family microcontroller circuit to accomplish this. The controller peruses the information perusing and continually works the engines keeping in mind the end goal to accomplish wanted

cleaning. An Android application takes into consideration manual control of the automated vehicle and exchanging as wanted remotely. We likewise mean to set the framework to intermittently work and delete the entire whiteboard. In this manner the framework accomplishes an adroitly robotized mechanical whiteboard eraser robot. The program starts when the operator directs the cursors on the Android App to guide the duster along the board. An erasure request is initiated which drives the motors through the program stored in the microco
ntroller. Upon completion of task, the motors are deactivated followed by the resetting of the system, thereupon waiting for another erasure request.

METHODOLOGY

AC Power Supply is given to the receiving circuit, a transformer and a bridged rectifier converts 120V AC to 5V DC. The Bluetooth module is initialized and connected to an Android App, a Serial Communication is established between the Android App and the Bluetooth module. A required direction is given into the Application using arrows. The microcontroller drives the motors in the requisite directions along axis according to the directions given on the Application interface. The Kiel uVision5 Software is a platform used to compile the programme for the microcontroller and the Willar Programmer 1.0 is the application used along with the burner to write the programme on the microcontroller.

Fig 3: Bluetooth Apps

The two Bluetooth Android Apps used for the system are Brainz Bluetooth and Tank Bluetooth Controller. A person holds the mobile having the android apps installed for transmitting required actions for the eraser like direction or the block of board to be erased. If the eraser request is accepted then the motor is activated and begins driving eraser member across the board. As the signal is completed the motor is deactivated and thus resets the system.

Fig 4: Virtual Blocks on Whiteboard

The system is also operated considering the fact that the whiteboard is virtually divided into four blocks and when a dedicated button is pressed the eraser driving motor system is programmed in such a manner that it reaches the corresponding block, thereby reducing effort and hence enhancing speed and efficiency.

Fig 5: The Whiteboard Eraser.

CONCLUSION

Thus the Whiteboard under consideration is erased remotely using a Bluetooth Android App, this is achieved by manually gliding duster over Whiteboard along two axis which is remotely controlled and glided using the android interface and thereby driven by the motor driver controlled by the microcontroller. Whiteboard is erased wholly, achieved by programming microcontroller 8051 and the virtual division of the whiteboard into blocks ensures quicker and efficient erasure of the board.

FUTURE SCOPE

The future scope for the existing and our designed system is that the system can be designed to overcome the friction caused on a craggy and rugged surface of a blackboard and thereby be used on the same. The system can be made in such a manner that the duster can be detachable and easily removed when a manual cleaning is deemed necessary and thereupon replaced back in its place, moreover the system can be developed into a consumer end product wherein it could be sold to the Universities, colleges, schools and other places where its use is required. The system can also be designed in order to clean high-rise buildings where every now and then a labourer dies falling from the extreme heights.

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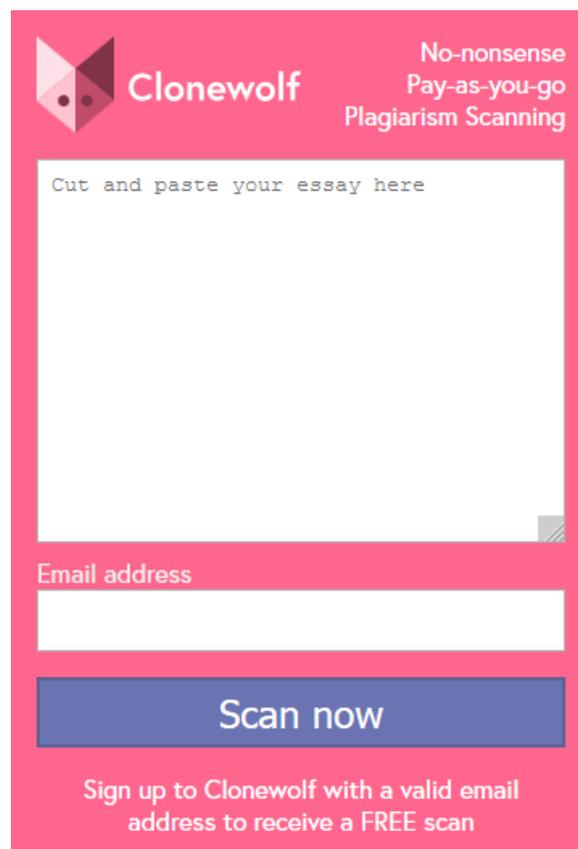
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