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Implementation of Robo-Maid using Controller

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***Abstract*— The aim of automation is to save time and human efforts. We need an automatic system that cleans on its own without human interventions. People in cities have irregular and long working times in such a situation a person will always find ways of saving time. Previously many gadgets that reduce human efforts were present but these gadgets need some manual work even. Like a vacuum cleaner also need to move around where ever it's necessary to be cleaned. So there is need to atomise such systems. This paper focuses on implementation of Robo Maid using microcontroller which will be very useful for household applications.**

***Keywords*— Robo Maid, Automation**

I.INTRODUCTION

In today's world automation plays very important role. We need a cleaning system that will work automatically without human interference and will save time. Especially for working women it becomes difficult to handle both home and office work together. So this paper focuses on design of Robo Maid using Microcontroller. The heart of the system is a microcontroller. It is programmed to accept inputs to sense obstacles around it and control the robot to avoid any collisions. There is an IR sensor used at the front and the remaining on the left, right and back of the robot to detect obstacles. In case of an obstacle or a potential collision, the microcontroller controls the motion of the robot.

II. BLOCK DIAGRAM & DESCRIPTION

Figure1 shows the Block diagram of Robo Maid which consist of microcontroller interfaced with IR sensor, vacuum cleaner, and liquid level indicator, motor, LCD. When system is turned on Robo starts cleaning in specified path when obstacle is detected it changes the path automatically to avoid collision. A solenoid valve is electromechanically operated valve. It is controlled by electric current through solenoid. Their tasks are to shut off, release distributes or mix fluid .Initially vacuum cleaner starts to suck dust for cleaning floor area. After that it sprinkles water on cleaned area & brush is used to clean the same area. Thus all these tasks are performed simultaneously to clean the total area. When liquid in tank goes below level then buzzer starts.

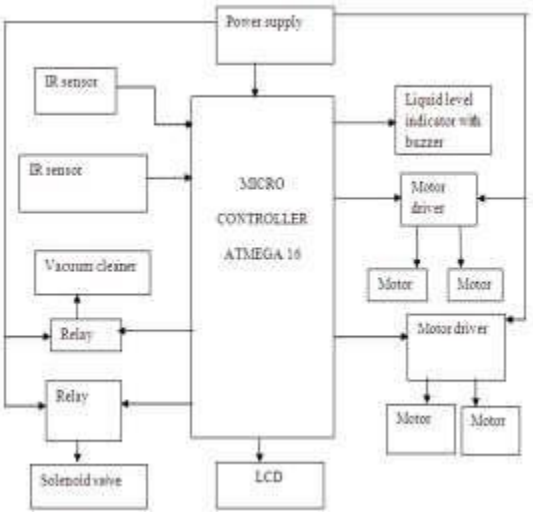

Figure 1: Block diagram of Robo Maid

III. FLOWCHART

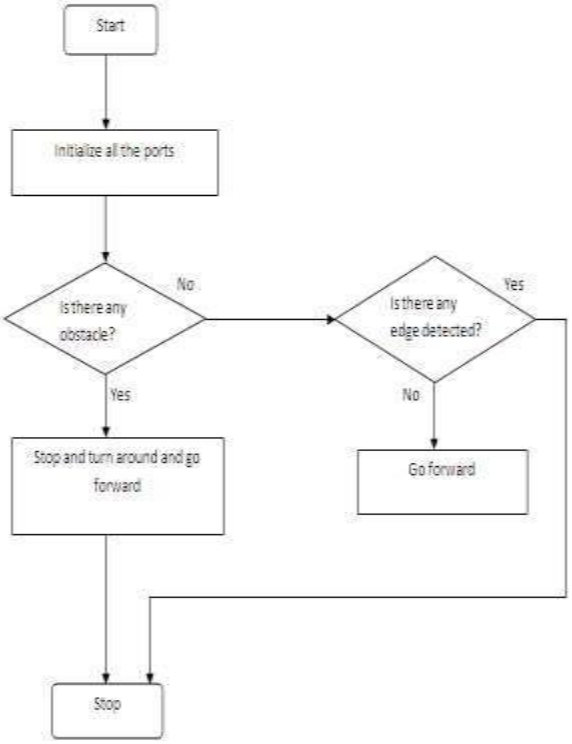

Figure 2: Flow chart

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Above figure 2 shows sequence of operations carried out in the final setup so as to carry out cleaning operation properly which will provide better results.

IV. SIMULATION RESULT

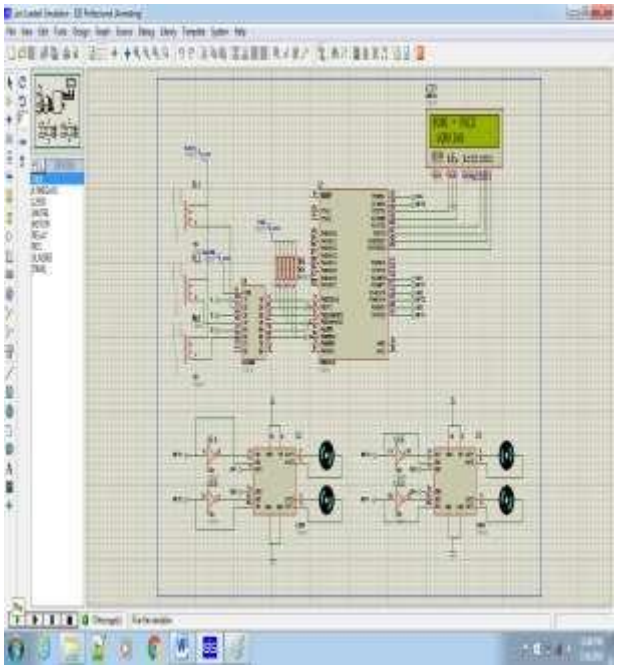

Figure 3: Simulation Result

The figure shows the simulation result of setup. When the _Start Debugging' command is given, the simulation is starts. As in the figure, it shows running motors, relay ON/ OFF and LCD displaying name of the project as ROBO-MAID and status of the robot as WORKING.

V. EXPERIMENTAL SETUP

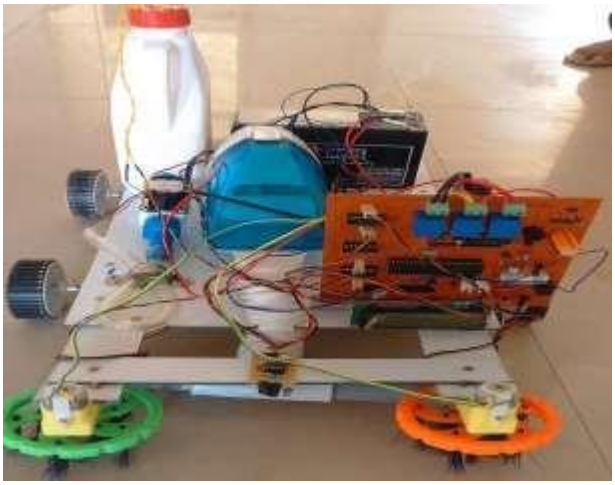

Figure 4: Experimental setup

Above figure 4 shows final experimental setup which is the actual model of the robot. It has motors, wheels and the parts mounted on the robot body. These parts include battery, vacuum cleaner, water tank, sensors and controlling part that is PCB with microcontroller and other components.

VI. CONCLUSION

The successful designing and working of the Automatic cleaner ―Robo-maid‖ is carried out. Its automatism and obstacle avoidance makes it very useful for cleaning, especially, where frequent cleaning is required. It achieves its aim of reducing human efforts and time. It can be used in small as well as large scale industries (after further improvements like DTMF technique etc.) and thus reduces time and efforts.

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