Design of Ai Based Vacuum Cleaning System with Information Storage

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ABSTRACT

Now the trending technologies has created new demands for compact living and households. Household appliances perform an important role in modern homes, where the life-cycle of the products play a significant role. Products that spend most of their time in storage are required to answer new user demands to interplay and integrate into the household, including products such as vacuum cleaners. In recent years, floor cleaning machines are getting more popular for cleaning large floor area in minimum time. However in India, which is a developing country requires large type of such machines to satisfy the cleaning needs. The present invention relates to the field of artificial intelligence controlled vacuum cleaning system with information storage is specially designed to clean up the surface with the help of electromechanical control system. The system is designed to record the information about the surface to clean and to store the same in the memory.

Keywords : Home needs, Vacuum cleaner, Artificial Intelligence, wiper, storage, Arduino board

I. INTRODUCTION

Vacuum cleaners are established electrical household products with the main function of cleaning the hospitals, schools, home with the use of suction to collect dirt and dust. Today's market offers different types of models and solutions. In conjunction with urbanisation and a growing population, new demands are set regarding compact living solutions and home products that function in everyday life.

The reasons for floor cleaning are:

- ➢ Injuries due to slips on the floors are cause of accidental injuries or death. Bad practice in floor cleaning is a major cause of accidents.
- ➢ To beautify the floor.
- ➢ Debris and obstructions are to be removed.
- ➢ Allergens and dusts are to be removed.
- ➢ Surfaces wear to be avoided.
- ➢ To make the environment sanitary (kitchens).
- ➢ Traction should be maintained at optimum level, so that no slip will occur.

The dust or water present on the floor is scrub by the front two brushes. This dust and water is collected by the vacuum cleaner and the detergent water is sprayed on the floor the mope present in the middle section of the chassis perform rotary motion on the floor which cleans the dirt or dust. The remaining water on the floor is wiping by the wiper present in end of the cleaning machine.

II. BACKGROUND

Background description includes information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

As modern houses are using more sophisticated equipment's in order to cope up with household chores. AI controlled vacuum cleaner is specially designed to clean up the surface with the help of electro mechanical control system, the role of AI is to enable the system to detect any obstacle and to ensure that the system works without any human intervention. In addition to that the system is designed to record the information about the surface to clean and to store the same in the memory, where in the system can record the details of 1000 different surface with different measurements.

A flexible and easy to use vacuum cleaner which can operate in 2 different modes and provides the facility for the customer to clean the surface in the presence or in the absence. As the system works in manual and auto mode it becomes very easy to clean the stored surface area or to clean the new surface which is unknown to the system to clean. The system consists of sensors to monitor the obstacles and motor to control the speed, it is driven by a microcontroller. Storing the surface area for the initial clean is the USP of the system designed, and because of this only the

system can work in known as well as unknown areas for cleaning the surface.

A number of different types of vacuum cleaning systems that are known in the prior art. For example, the following patents are provided for their supportive teachings and are all incorporated by reference.

The use of Artificial Intelligence will help the system to execute the job without any human intervention. The system can be set to complete the task of surface cleaning when the people are not in the house, so that the task will happen without any disturbing and even happens faster. The system is provided with storage for storing the data pertaining to the surfaces which are scanned initially, this will help the system to trace the surface in case of no instruction provided by the user.
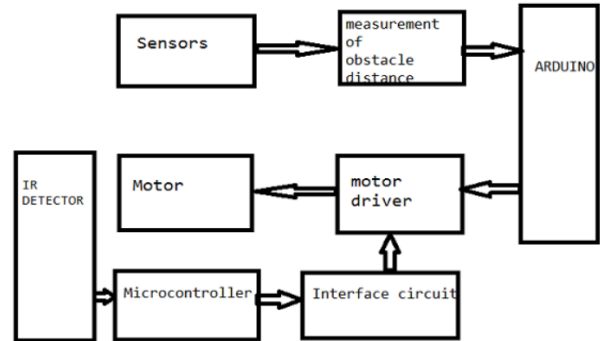
III. IMPLEMENTATION

Fig 1: Block Diagram of Vacuum Cleaner with storage

The invention will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Figure 1 illustrates the block diagram of an artificial intelligence controlled vacuum cleaning system with information storage, according to the embodiment herein.

It may look like a complicated machine, but the conventional vacuum cleaner is actually made up of only six essential components:

a. An intake port, which may include a variety of cleaning accessories
b. An exhaust ports
c. An electric motor
d. A fan
e. A porous bag
f. A housing that contains all the other components

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When you plug the vacuum cleaner in and turn it on, this is what happens:
a. The electric current operates the motor. The motor is attached to the fan, which has angled blades (like an airplane propeller).
b. As the fan blades turn, they force air forward, toward the exhaust port (check out How Airplanes Work to find out what causes this).
c. When air particles are driven forward, the density of particles (and therefore the air pressure) increases in front of the fan and decreases behind the fan.

This pressure drops behind the fan is just like the pressure drop in the straw when you sip from your drink. The pressure level in the area behind the fan drops below the pressure level outside the vacuum cleaner (the ambient air pressure). This creates suction, a partial vacuum, inside the vacuum cleaner. The ambient air pushes itself into the vacuum cleaner through the intake port because the air pressure inside the vacuum cleaner is lower than the pressure outside.

As long as the fan is running and the passageway through the vacuum cleaner remains open, there is a constant stream of air moving through the intake port and out the exhaust port. But how does a flowing stream of air collect the dirt and debris from your carpet? The key principle is friction. As the dirt-filled air makes its way to the exhaust port, it passes through the vacuum-cleaner bag. These bags are made of porous woven material (typically cloth or paper), which acts as an air filter. The tiny holes in the bag are large enough to let air particles pass by, but too small for most dirt particles to fit through. Thus, when the air current streams into the bag, all the air moves on through the material, but the dirt and debris collect in the bag.

Reference will now be made in detail to the exemplary embodiment of the present disclosure. Before describing the detailed embodiments that are in accordance with the present disclosure, it should be observed that the embodiment resides primarily in combinations arrangement of the system according to an embodiment herein and as exemplified in FIG. 1

IV. CONCLUSION

The study resulted in an innovative product concept proposal for a new vacuum cleaner that adapts into a modern home by facilitating storage, through addressing the needs of the end user. The final concept, with a working name of the Clean-Cube, proposes the use of a quadratic shape to facilitate optimized space, contribute to structured storage and to further create storage. The future work suggests the use of a telescopic carry-on handle and caster wheels to give a controlled and adaptable manoeuvrability for the user. The final concept exhibited a storing solution for the hose to enable an efficient and

unnoticeable household product, to fit into the modern home.

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