

Robotic Maid

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ABSTRACT

The Robotic Maid uses a arduino to detect obstacles and manipulates its direction as per the inputs. This system is designed to accept values to sense obstacles around it and control the robot to avoid the collisions. In case of an obstacle, or a potential collision, the arduino controls the wheels of the robot. There will vacuum cleaner at the front of the robot performs the cleaning process and there will be a mob at the backside of the robot.

This robotic maid is made for cleaning tasks in home environments is introduced. System has three subsystems: electrical, software and fabricated of which arduino, sensors and motor are the electrical and mechanical subsystems respectively and the software subsystem is the brain of the robot.

Keywords:- microcontroller, suction unit, blob algorithm, gaussian blur, bit-map, zigbee.

1. INTRODUCTION

One of the basic requirements at home is cleaning which is an iterative process and required on daily basis consuming both time and energy. Robotic Maid is an approach to make cleaning an easy and time efficient task also to give comfort to the human by doing the domestic works.

The functions of a Cleaning Robot are:

- 1) Detecting the position of the area to be cleaned.
- 2) Path estimation to reach that position.
- 3) Cleaning the area with the help of Vacuum Cleaner which is attached to it by sucking the dust.
- 4) Using the mob for cleaning the floor or wiping the floor.

II. GAUSSIAN BLUR ALGORITHM

In image processing, a **Gaussian blur** is the output of blur image by a Gaussian function. It is used for effect in graphics software, typically to reduce image noise and reduce detail. Two-dimensional Gaussian blur operations are applied in ample type's image processing applications. The execution times of these operations can be time consuming, especially where large kernels are involved. Optimum use of important two basic properties of Gaussian blurs can help to reduce these long execution times.

1. Huge and vast kernels can be composed into the sequential application of minute kernels.

2. This algorithm blurs are separable into row and column operations.

3. The column and row operations and command can be ordered as finite-state machines to produce optimum code.

III. THE BOLB ALGORITHM

In computer vision, **blob detection** techniques are aimed at detecting regions in a digital image that vary in properties, such as brightness or color, compared to nearby regions. Informally, a blob is a region of an image in which some part are constant or approximately constant, most of all the points in a blob can be considered in some sense to be same to each other.

Given some property of interest expressed as a function of position upon the image, there are two types of blob detectors: (i) differential methods, which is highly dependent on derivatives of the function with respect to position,

(ii) Methods based on local extreme, which is highly depend on the present maxima and minima of the function. With the more recent technical terms used in the field, these detectors

can also be defined to as interest point operators, or interest region operators.

IV. THE ROOMBA CLEANER

While Roomba is cleaning, it avoids the infrared sensors and signals on the front underside of the unit. These sensors constantly infrared signals, and Roomba takes them to instantly bounce back. If it's approaching a obstacles, the signals all of a sudden disconnected. This is how Roomba knows to head in different direction. When Roomba collide into something, its bumper retracts actively, activating object sensors that tell Roomba it has got an obstacle. The Roomba then reacts and repeats the sequential actions of backing up, rotating and moving ahead until it finds a clear path.

V. COMMUNICATION PROTOCOL FOR EX-CHANGING

In telecommunications, a communications protocol is a set of rules that allow two or more object of a communications system to transmit data via any type of variation of a physical quantity. These are the rules that set the syntax, format and in line of communication and possible the error to recover. Rules may be operated by hardware, software or a mixture of hardware and software.

Communicating systems use well-defined protocol or rules for exchanging messages. Every message has an same meaning planned to elicit a response from a range of possible responses pre-planned for that specific situation. The specified behaviour is typically regardless of how it is to be made. Communications protocols have to be selected upon for the systems. To acquire agreement, a rule may be developed into a technical standard. A programming method describes the same for computations, so there is a close similarity between protocols and programming languages: protocols are to communications rules and programming languages are to computations.

VI. SPIRAL AREA COVERAGE ALGORITHM

Spiral filling paths cover the area initialization from the outside and going towards the centre. In practically every environment a single spiral cannot cover the entire area and thus multiple spirals need to be made, requiring a format like backtracking (going back to places where the robot has been before, but where it found a way to go to a still uncovered area) to ensure complete coverage.

VII. BIT-MAP ALGORITHM

The main method for memorizes the clean area is this approach. It is basically, used for unknown user deployed area, they are also more likely to give result by the actual condition.

This representation is used to memorize a shape an unidentifiable obstacles by putting the local image, created by contouring with arm, into the global map.

VIII. ZIGBEE 802.15.2

Zigbee module is basically deployed for the remote control and sensor application which is suitable for long range communication system. The inadequate application for 802.15.4 is to control and monitor the low -level of data throughput.

These modules are used to control the gadgets which are battery powered. The low-powered consumption is a key requirement and in this the data is send in packet. The range between 2 stations should be 70 metres. Although this can be expanded to greater extent. This module can be operated in the free band range of 2.4GHZ.

IX. CONCLUSION

Finally, this paper concludes after surveying various algorithm as like blob algorithm, Bit-map algorithm, Roomba Cleaner Algorithm, Gaussian blur algorithm, Zigbee 802.15.4 module. Thus, here this paper concludes after surveying these technologies, we are coming with the best approach in order for cheaper and maximum throughput for the optimum and efficient cleaning.

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