

Design of Slam Robot Based on Internet of Things

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Abstract

The hindrance evasion is utilized for recognizing obstacles and evading the impact of collision. This is autonomous robot used to clean the useless objects in and around the orbit in the earth. The plan of obstacles shirking requires the coordination of numerous sensors as indicated by their presentation task it gets the data from encompassing zone through mounted sensors. Ultrasonic sensor is generally appropriate for snag location and it is of ease and high going capacity. Vacuum cleaner is used to remove the space debris in an efficient manner. Concurrent Localization and Mapping gauges provide the posture of a robot and the guide of the climate simultaneously; this sort of robot manufactures a guide speaking to its spatial climate while monitoring its situation inside the constructed map. SLAM is central to a range of indoor, outside, in-air and submerged applications for both monitored and self-sufficient vehicles.

Keywords-*Robot, Sensors.*

I. INTRODUCTION

Robots are designed to activate for some reason yet these are utilized in critical conditions like bomb recognition, removing of different bombs. Robots can take any frame however a large number of them have given the human appearance. The robots which have appeared as human appearance may liable to have the walk like people, speak like human, it is defined in terms of discourse acknowledgment where the things a human can do. The vast majority of the robots of today is used commonly and is known as bio-motivated robots [1]. A scan matching technique is implemented for map estimation in filter design and it is used to transform sequences of direction measurements [2]. A gesture based SLAM uses a new technology for mapping and finding the location measurement without the involvement of graphical location requirements, this method delegates a new directions and making the origin of robot intuition [3-4]. SLAM plays a vital role especially in the field a mobile robot system. The main criteria of SLAM are to estimate the area station of the robot as well as the neighboring area available in the map. Proper interaction of robots can be done with the available operation area. It operates on the middle sensor node and optical sensor nodes which can be operated in two modes such as active or passive. Recently, small, light, and affordable cameras work as passive sensor nodes, therefore destroying of nodes are not possible with same areas [7]. Robot can be used in space for collecting the unwanted objects which are in the space craft known as space debris. In order to clean the space debris, Robot can be used

to clean the junk or waste pieces in space in delightful way.

Internet of Things

IoT refers to a type of network deals with number of devices connected based on protocol. In this paper IOT is used to communicate the data information from sensor to the cloud. The sensors are used to sense, communicate and share information through proper devices verity of applications can be implemented such as speed, secretly of data, energy efficiency. IoT provides go high connectivity, the state of devices charge dynamically. The structure of IoT comprises data and signal processing interoperability.

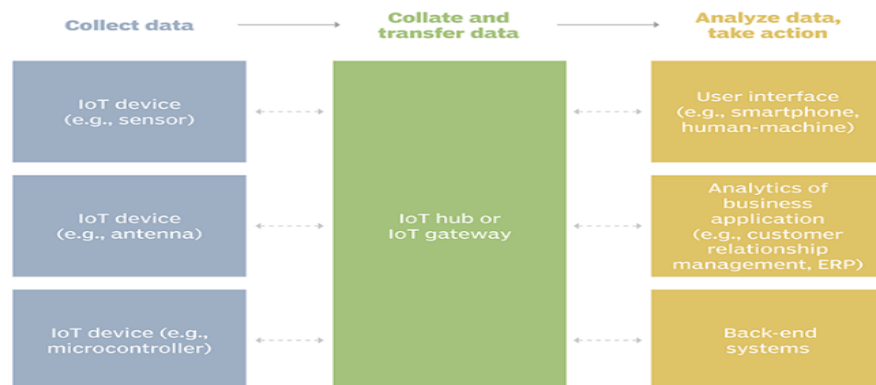


Fig 1: Pictorial Representation of IOT

The most important hardware of in IoT in sensor the vital role of sensors manages the sensing elements through the measurement devices such as active and Passive. The application of it can be implemented in healthcare systems, energy resources, manufacturing an intelligent product, the primary concern of traffic congestion, empowers educators, governing bodies such as smart trash cans it provides better evidence for legal documents

II. METHODOLOGY

ROBOT

The plan of hindrance evasion requires the coordination of numerous sensors as per their errand. It gets the data from encompassing territory through mounted sensors. Three ultrasonic sensors are associated with Arduino regulator for object discovery. Sensors perform functions such as integration and fusion where it collects the data and combined properly. This estimates the directions of robot. The deliberate sensor outputs are shown on LCD. All the data transferred to web-worker through IOT gadgets.

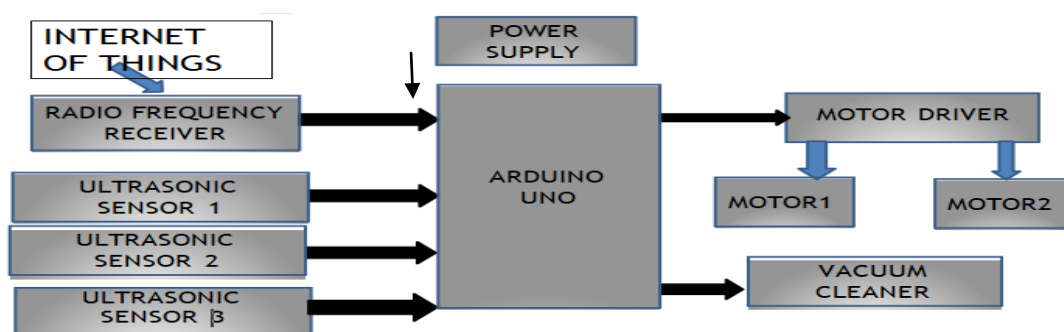


Fig 2: Block Diagram of ROBOT

Ultrasonic transducers are transducers that convert ultrasound waves to electrical signals or vice versa. Ultrasonic sensor provides full support to robot's autonomous navigation. It provides fast response time to respond quickly to the changing environments around it and provide valuable information on the distance and direction to the target, sensors used with high-performance, high output power, noise rejection, auto calibration, and factory calibrated beam patterns.

SLAM

Simultaneous Localization and Mapping is a technique implemented where it occupies the environment and its surroundings a Robot observes the environment related to it. In robot many sensors are used which are moved nearby area. If the corresponding or position known to robot identify the position of direction which is determined by the movement is known as the robot the ultimate goal of the robot is to estimate the land Mariesdetermined byRobot pose is known as mapping. Mapping is based modeling the environment. SLAM has comprised factors such as it builds a map and locates the robot [6]. By using SLAM algorithm we can concatenate many observed information related among them. It presents ideal calculations that utilizes the exceptional kind of the frameworks and anew compressed filler, significantly reduces the calculation requirements when working in neighborhoods with high recurrence external sensors [5].

The most successive and least demanding approach to utilize SLAM for map acquisition is employed during this stage, the system is physically controlled the environmental condition. Sensor information is documented and interprets by the factors involved in landmarks. Information collected by the sensor later used for localization path planning which provide the best results for the real time applications [7].

III.RESULTS AND DISCUSSION

SLAM estimates the sequential movement of robot which includes some margin of error. A new technique is proposed to achieve better results by implementing localization and map matching algorithm. The below figure shows the mapping at the initial & end condition in which the result drastically improved and countermeasure the robot with pose directions with initial & end points.

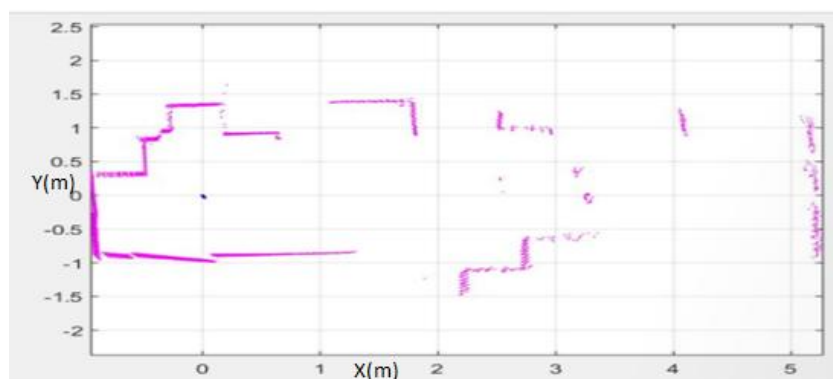


Fig 3: Start map completion of ROBOT



Fig 4: Start map completion of ROBOT

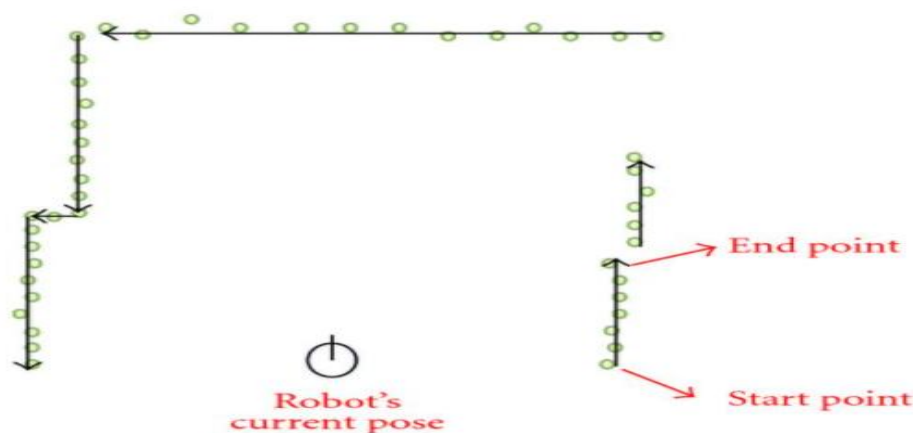


Fig 5 Directions of Robot

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