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# The Implementation of Multitasking Robot for Industrial Autonomus Applications

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***Abstract:*** In enterprises stacking and emptying of substantial loads physically is one of the most significant assignments which ends up being very troublesome, tedious and hazardous for people. This paper shows the plan of the business based robotized robot. The self-sufficient robot is intended to begin its development from a beginning position where merchandise are stacked on it, at that point pursue a way of white line drawn on dark surface and empty products without anyone else subsequent to arriving at a goal place. Computerized Line Following sensor has been mounted before the robot with the goal that the sensor can distinguish way by producing and accepting sign enabling it to move in the pre-characterized track having left and right diverts while conveying products from beginning situation to the goal.

***Keywords: Real Time Operating System, Bluetooth, Industrial Automation, Loading and Unloading.***

## I.INTRODUCTION

There are several ways of using computers and technological tools to support the process of teaching and learning in various educational levels. Among these technologies, educational robotics has been increasing and is largely used mainly for teaching presenting interesting and motivating pedagogical conditions. The robot makes use of some faculties, such as perception, logical thinking and action to solve a large number of problems that can be encountered in daily life. Personal computers are being used in schools, however, some activities need computational resources with special characteristics such as low energy consumption, mobility, small size, input and output, special sensors and motors. These features are commonly needed when students use computing resources, for example, in their prototypes for a Science Fair. Robotics is the area responsible for the development of devices capable of performing tasks with efficiency and accuracy, including those that are impossible for man to be executed without life risk. It seeks the development and integration of techniques and algorithms for creating robots [2]. The robot makes use of faculties, such as perception, thought and action to develop research and proposals aimed at solving the most varied problems encountered in daily life, for example, using robots to explore places that man cannot achieve [3 ].

**Figure 1: The Robot.**

The use of robotics as a tool in the teaching-learning process proved to be a strong ally in the knowledge acquisition, since it allows pre-stimulating the design, engineering and computer skills on students featuring robotic activity as being interdisciplinary, so highly relevant to school curriculum [4]. In such an environment consisting of technological resources, such as interfaces, motors, sensors, software and materials, the student and teacher have the opportunity to create all kinds of robotic devices or robots. In the process of creating a robot, a student finds the need to seek information in areas such as mathematics, physics, mechanics, electronics and more. And yet, by defming the project through the use of clear forms of language, will increase the capacity of expression of ideas, research and application of aesthetic concepts [4]. With this, educational robotics joins the other resources used in the teaching-learning process as a tool, which inserted in the classroom activities, allows exploring different themes of the school curriculum.

## II. LITERATURE SURVEY

To get necessary information productively in Web Queries information mining, numerous sorts of uses like immense library catalog applications, data science, examine applications, some software engineering research applications, and business seek applications can work Facet mining technique.Flifcart.com needs aspects mining application. Specific ordinary faceted hunt methodologies

are mostly amassed in a particular space or predefined feature classifications divergent from question aspect digging that creates issues for each inquiry except for any area presumptions or prior learning. An investigation has been continuing for a long time on the tricky of definitely mining aspect metadata and speaking to papers onto these classifications has been accepted for a considerable length of time [22-23], An accurate assessment of faceted hunt is distant its scope. Dakka et al. [24-26] alluded strategies to take feature needs for a content body or a content database at that point dispense each archive to those aspects. One fundamental variety is that we plan to mine a few semantically arrange arrangements of things to control clients' hunt while Dakka's strategies center around structure idea pecking orders. E. Stoica et al. [27] proposed Castanet to consequently produce area explicit faceted metadata from literary depictions of things that rely upon existing fringe lexical catalog WordNet.

The facet model planned by Bonino et al. [28] concentrates scheduled using structured information in the relational catalog. It offers the proper definitions of facet, facet space, center, multi-dimensional categorization, etc. Aspect provides two search algorithms for faceted routing and looks for results ranking respectively, who are placed into practice in SQL.

An aspect model with a Directed Acyclic Graph (DAG) structure dependent on the set hypothesis by Li et al. [29] exhibited. It is valuable in the Faceted-media framework. It displays the best possible meanings of class levels of leadership, aspect, routeway, faceted interface and gives the feature positioning activity dependent on the route cost and pair shrewd comparability among issues. FKR model introduces the precise meanings of the unit, connection, feature, elucidation, and sorts out aspect terms into a cross-section structure not quite the same as the above set hypothesis based models. FKR can plot information things to a separate order and has no intelligence. Giunchiglia et al. were proposed by Faceted Lightweight Ontology, .which [30] is a run of the lightweight mill philosophy. It has an established tree structure where each hub is Linked with a characteristic language mark. As per specific predefined designs that catch various parts of things, the scores of centers are prearranged. This model gives the meanings of class cosmology, lightweight metaphysics and faceted lightweight philosophy except for intuitive activities.

## III.PROPOSED METHODOLOGY

The robot presented here was constructed to exert a large number of features, so it was essential to mount it with quality materials at a low cost, such as the acrylic physical structures that supports all the features and a ARM Cortex microcontroller with a considerable number of entries and exits and also some additional functions, such as, for example, PWM, capture and compare, analog comparators and USART serial communication channel.

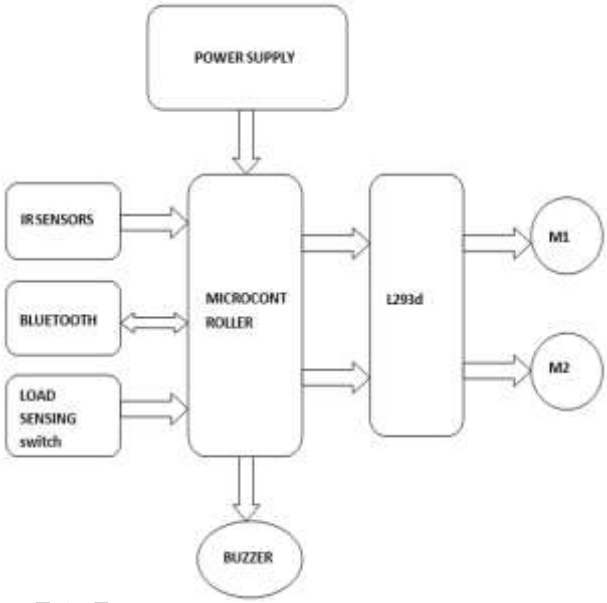


**Figure 2: Block Diagram of Proposed Methodology.**

### *IR Sensor*

An infrared (IR) sensor is an electronic device that measures and detects infrared radiation in its surrounding environment. Infrared radiation was accidentally discovered by an astronomer named William Herchel in 1800. While measuring the temperature of each color of light (separated by a prism), he noticed that the temperature just beyond the red light was highest. IR is invisible to the human eye, as its wavelength is longer than that of visible light (though it is still on the same electromagnetic spectrum). Anything that emits heat (everything that has a temperature above around five degrees Kelvin) gives off infrared radiation.

**Figure 3: IR Sensor.**

There are two types of infrared sensors: active and passive. Active infrared sensors both emit and detect infrared radiation. Active IR sensors have two parts: a light emitting diode (LED) and a receiver. When an object comes close to the sensor, the infrared light from the LED reflects off of the object and is detected by the receiver. Active IR sensors act as proximity sensors, and they are commonly used in obstacle detection systems (such as in robots).

***Bluetooth Module***

The HC-05 is a very cool module which can add two-way (full-duplex) wireless functionality to your projects. You can use this module to communicate between two microcontrollers like Arduino or communicate with any device with Bluetooth functionality like a Phone or Laptop. There are many android applications that are already available which makes this process a lot easier.


**Figure 4: Bluetooth Module.**

The module communicates with the help of USART at 9600 baud rate hence it is easy to interface with any microcontroller that supports USART. We can also configure the default values of the module by using the command mode. So if you looking for a Wireless module that could transfer data from your computer or mobile phone to microcontroller or vice versa then this module might be the right choice for you. However do not expect this module to transfer multimedia like photos or songs; you might have to look into the CSR8645 module for that.

***Real Time Operating System***

FreeRTOS provides the best of all worlds: FreeRTOS is truly free and supported, even when used in commercial applications. The FreeRTOS open source MIT license does not require you to expose your proprietary IP. You can take a product to market using FreeRTOS without even talking to us, let alone paying any fees, and thousands of people do just that. If, at any time, you would like to receive additional backup, or if your legal team require additional written guarantees or indemnification, then there is a simple low cost commercial upgrade path. Your peace of mind comes with the knowledge that you can opt to take the commercial route at any time you choose.

Here are some reasons why FreeRTOS is a good choice for your next application – FreeRTOS…Provides a single and independent solution for many different architectures and development tools. Is known to be reliable. Confidence is assured by the activities undertaken by the SafeRTOS sister project. Is feature rich and still undergoing continuous active development. Has a minimal ROM, RAM and processing overhead. Typically an RTOS kernel binary image will be in the region of 6K to 12K bytes.Is very simple – the core of the RTOS kernel is contained in only 3 C files. The majority of the many files included in the .zip file download relate only to the numerous demonstration applications. Is truly free for use in commercial applications (see license conditions for details).Has commercial licensing, professional support and porting services available in the form of OPENRTOS from our partner WITTENSTEIN high integrity systems.

Has a migration path to SafeRTOS, which includes certifications for the medical, automotive and industrial sectors. Is well established with a large and ever growing user base. Contains a pre-configured example for each port. No need to figure out how to setup a project just download and compile! Has an excellent, monitored, and active free support forum. Has the assurance that commercial support is available should it be required. Provides ample documentation. Is very scalable, simple and easy to use.FreeRTOS offers a smaller and easier real time processing alternative for applications where eCOS, embedded Linux (or Real Time Linux) and even uCLinux won't fit, are not appropriate, or are not available.

***ARM Cortex***

The Cortx-M3 processor is a high performance 32-bit processor designed offers significant benefits to developers, including:

- Outstanding processing performance combined with fast interrupt handling
- Enhanced system debug with extensive trace capabilities.

**Figure 5: ARM Cortex STM32.**

- Efficient processor core, system and memories
- Ultra-low power consumption with integrated sleep modes
- Platform security, with integrated memory protection unit (MPU)

***Advantages of Proposed Method***

- Maximizing Industrial security
- Flexibility for new devices and appliances
- Great for managing the Industry.
- Saves time and power

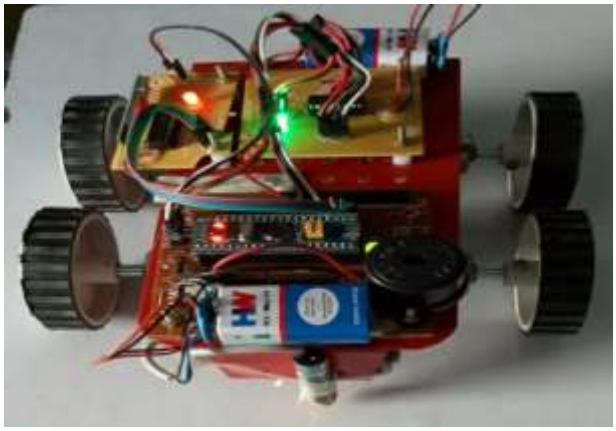

**Figure 6: Hardware Kit.**

VI.CONCLUSION & FUTURE WORK

The project was executed using STM32F103 microcontroller which is based on the ARM-CortexM3 architecture. The completely executed without GPS module. The investigations for approval are performed effectively. When an auto-versatile is out of timetable or enter a no man's land of sign, the status can be educated promptly and the working calendar can be proceeded easily. The essential outcomes can be the premise of savvy mechanization generation line and further approaches will be examined in future.

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