**AUTOMATED BOOK PICKING ROBOT FOR LIBRARIES**

***INTRODUCTION:***

Library has many connotations. A **library** is a collection of information resources and services, organized for use, and maintained by a public body, institution, or private individual. In the more traditional sense, it means a collection of books.

Typically we need a librarian to pick the books and hand it over to the person to whom the books are being issued. This might be an easy task incase the library floor area is small. Also, to search for the books by humans takes a lot of time as many a times the books gets overlooked by the human eye.

To automate this process of book finding and picking we suggest a robot with an arm with some degrees of freedom which will be able to findout the book with the required tag and then pick it and place it on the table.

***DISCRIPTION:***

Here we will be placing the books in a rack and all the books will be tagged by RFID tags and an RFID reader will be placed under the robot. The robot will perform a brute force method search and incase the book is found, the robotic arm will lower until the IR obstacle sensor placed over the arm detects the book and then the gripper will close the jaws to get an hold of the book and then the robotic arm is lifted after which the robot moves in the reverse direction to the place it started from and places the book.

The same principal can be used in the supermarkets to make an automated item collector.

In this case, the proposed robot will make the life of the librarian a lot simpler and the books can be tagged easily. The essential requirement in this project is the correct designing and fabrication of the lever, connecting Arms, motors, the gripping mechanism and the load bearing capacities.

***BLOCK DIAGRAM***

Microcontroller

P89V51RD2

LCD

RFID

READER

IR

Obstacle

ZigBee

L293

Motor

Driver

L293

Motor

Driver

Motor

Wheels

ARM

Motor

ZigBee

PC

Gripper

Motor

MUX

4052

***FEATURES:***

1. Moveable Base

This base houses the entire arm. A motor will be fitted under the base which can be made to move forward/reverse to take this mechanism to all the books in the rack.

1. The Base Shaft

The base shaft is directly screwed to the rotary base. It gives height to the device. Also, optional movement can be provided to the base shaft so that it can be tilted forward or backward by the help of motors.

1. Gripping Mechanism

This mechanism is used to hold the components to be picked. The gripper will be designed in such a manner that the books which it picks should not fall down. This will be done with the help of rubbery material on the inside surface of the gripper. The grip can be opened or closed with the help of the joystick control.

***COMPONENTS LIST:***

* Controller(P89V51RD2)
* 16x2 LCD
* RFID Reader and tags
* IR obstacle sensor
* DC motors and Mechanical Gripper
* L293 motor drivers
* Zig Bee
* Power supply

***SOFTWARES USED:***

* Keil
* Flash magic

***ADVANTAGES:***

* Reduces human effort
* Reduces human error
* Makes the management of the library, easier than ever.

***DISADVANTAGES:***

* Problems of mechanical functioning may occur
* Capability of lifting a book has limitation.