

Design of Robotic Arm for Disaster Management

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Abstract: In this paper, Design of Robotic Arm for Disaster Management is proposed. The Robotic Arm is to perform various functions by the mean of employing process or sequence of programmed operation with little or no human labor using Ad-hoc techniques. The goal of less or no probability of error with real time management is achieved. Easy operation by use of smartphones is achieved. Elimination of the stressed work by the humans on the systematic working to achieve desired production in the industry is made. By developing an autonomous nature of the system, the same is made a reliable one.

Keywords: Robotic Arm; ROVER-BOT;MCU; MPU; Automatic

I. INTRODUCTION

The Robotic Arm is a lightweight and expandable robot that can operate in extreme conditions where the human presence or availability is not possible due to various reasons. It can be also termed as an unmanned vehicle because it can be remotely operated by game-style hand controller. This robot can also be used as warfighters and first responders to carry out dangerous missions in high-threat battlefield scenarios to minimize the human casualties. This particular project actually comprises of two parts where the base part is for mobility and upper part is a robotic hand that performs the functions given to it wirelessly by the controller. It is a portable and easy-to-use modular design. It can be deployed in less than two minutes and operates under all weather conditions.

II. PROPOSED ARCHITECTURE

This work is able to successfully accomplish the defined functionality. A sample robot which can rotate, magnetize an object, lower and raise its arm, by being controlled by the microcontroller is built successfully. The development board is soldered and it used the required procedure for the correct operation of the controller. The development board has been interfaced to the stepper ,servo & dc motors such that the anthropomorphic like structure can be controlled from the buttons at the base of the structure (robotic arm). When signal come to robotic arm, it will activated and then it searching for the code object in storage area when it get confirmation of availability thus it call rover to collect and dispatch that object to its destination of call at the instant of getting signal inbuilt program in arduino controller activate and check signal status incoming signal on terminal via Node MCU module thus programmed the DC motor with fixed degree which have been place in programming for particular objects , end effeater as a claw made up of servo geared motor and spar gear assembly with L293d motor driver.

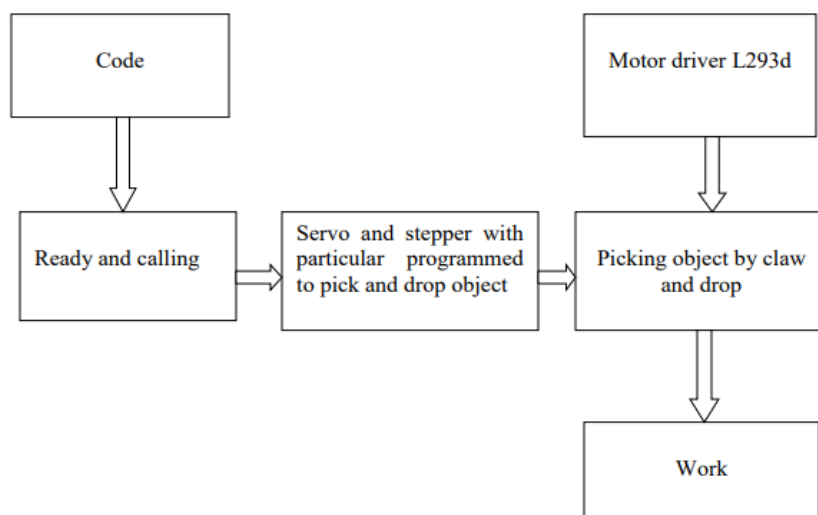


Fig 1: Flowchart for the working of Robotic arm

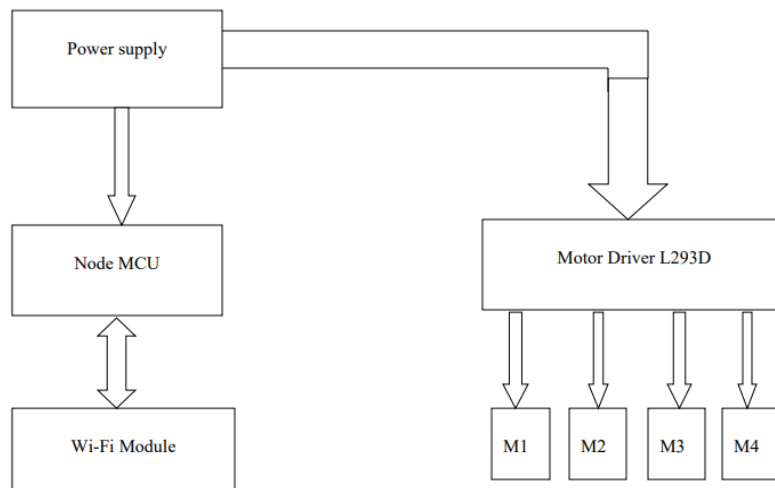


Fig 2: Proposed methodology for the working of Rover or vehicle used

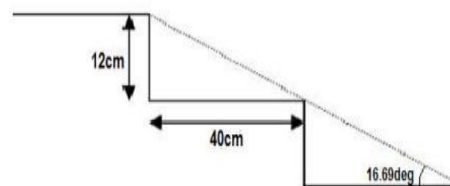


Fig 3: Tilt Angle & Wheel Base

III. CONCLUSION

In this work, the Robotic Arm is to perform various functions by the mean of employing process or sequence of programmed operation with little or no human labour using Ad-hoc techniques. The goal of less or no probability of error with real time management is achieved. Easy operation by use of smartphones is achieved. Elimination of the stressed work by the humans on the systematic working to achieve desired production in the industry is made. By developing an autonomous nature of the system, the same is made a reliable one. A solution for the simultaneous accomplishment of assembling work done in the industries by the means of single computes has not only provided ease in operation but also provides autocratic nature for monitoring purpose is designed.

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