

Wi-Fi controlled Pick and Place Robot

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Abstract- Nowadays, A Robot Is Employed In Practically Every Industry Where Automation Is Necessary Or Has Been Implemented. The Robot Must Be Managed Precisely In Accordance With The Needs Of The Operator For Perfect And Effective Operation. We Can Accomplish The Necessary Goals Of Smooth And Coherent Operational Control By Controlling The Robot Wirelessly. The Up, Down, Left, Right Arrows In Wifi Esp8266 Make It Simple To Control This Robot. Along With Simple Pick And Place Operations, This Robot Can Also Be Added With The Location Detection And Voice Recognition Features, Thus Validating Our Faith In A Technology That Will Definitely Form An Integral Part Of The Human Ecosystem In The Nearby Future.

Keywords – Home Automation, Iot, Microcontroller

I. Introduction

A Robot Is A Mechanical Device That Is Software Controlled And Employs Sensors To Direct One Or More End Effectors Through Pre-Programmed Motions In A Workspace To Manipulate Real Items. The Study Of Robots, Or Robotics, Is Described As The Convergence Of Computer Science And Machine Tool Technology. This Type Of Industrial Automation Is A Technology With Bright Future. It Is A Field Of Technology That Deals With The Creation, Management, Use Of Robots And Computer Systems For Robotic Control, Sensory Feedback, And Information Processing. It Is A Rapidly Growing Field, As We Continue To Research, Design And Build New Robots That Serve Various Practical Purposes, Whether Domestically, Commercially Or Militarily. Due To The Technological Advancement And The Demand For High

Performance Robots, New Robot Control Devices, New Drivers, And Sophisticated Control Algorithms Were Used To Develop Quicker, More Accurate And More Intelligent Robots.

Ii. Related Works

[1] A Wireless Controlled Surveillance Robot Is A Robot That Is Capable Of Carrying Out A Complex Series Of Actions Automatically, Specifically Programmable For The Required Task. A Robot Can Also Be Controlled By A Human Operator From A Far-Off Place.

[2] The Project Mainly Aims On How To Build An Autonomous Robot In This Case A Pick And Place Robot Using Line Tracking. This Project Proposes Three Main Parts Which Are Electric Circuit, Mechanical Design And Programming. To Build A Good Autonomous Robot, The Robot Must Also Be Very Easily And Freely Controlled By The User To Make Sure It Can Perform

Well. Generally, This Robot Will Be Used To Pick And Place Objects, For Some Applications Like Moving A Container From One Area To Another In A Factory Or Placing Components Onto The Pcb's. The Robot Uses Several Sensors To Guide The Direction Which Has Been Lined With Black Tape And The Robot Uses Several Motors For Moving. This Project Focuses On The Usage Of Pic Controller, A Motor For Motion And Sensor For Line Tracking. The Robot Functions Are Fully Controlled By A Software Program.

[3] The Project Deals With The Wireless Sensor-Based Remote Control Of Mobile Robots Motion In An Unknown Environment With Obstacles Using The Bluetooth Wireless Transmission And Sun Spot Technology. The Sun Spot Is Designed To Be A Flexible Development Platform, Capable Of Hosting Widely Differing ApplicationModules.

[4] In The Before Technology They Were Many Methods Used To Design And Implement, And Also Different Algorithms Were Used For Navigating The Mobile Robot. Unlike Bar Codes, No Clear Line Of Sight Is Required To Obtain An Accurate Read. As The Bar Codes Were High Of Cost, Rfid Tags Are Used. The Most Common And Popular Navigation Techniques Suggested In

The State Of The Art Generally Fall Under One Of The Following Categories: Map-Based Technique, Dead-Reckoning Based Technique, Landmark-Based Technique,

Vision-Based Technique, And Behavior-Based Technique. Each Navigation Technique Has Its Own Advantages And Disadvantages.

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Iii. Materials And Methods A. Block Diagram

The Following Figure Clearly Demonstrates The Block Diagram Of Wi-Fi Controlled Pick And Place Robot.

B. Components Required

The Components Required For The Implementation Of Wi Fi Controlled Pick And Place Robot Are Mentioned Below.

- Pam8403 5v Audio Amplifier
- Esp 32 Cam Module
- Esp 8266 Wi-Fi Module
- L298n Motor Drive
- 8051 Microcontroller
- Neo – 6m Gps Module
- Organic Light Emitting Diode (O-Led) Display
- 5v/10v Power Supply Board
- 12v Rechargeable Battery
- 8 Rpm Servo Motor
- 60 Rpm Servo Motor
- Speaker
- Ultrasonic Sensor

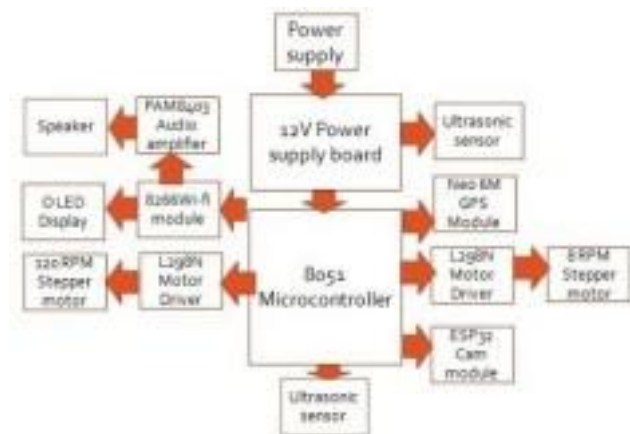
Iv. Methodology

The Project Aims At Designing A Robot Which Is Controlled Through Android Phone Over Wi-Fi Technology. The Robot Can Be Moved In All The Four Directions

(Front, Back, Left And Right) Through Predefined Keys Assigned In The Android Application. This Project Describes A New Economical Solution Of Robot Control Systems. The Presented Robot Arm Control System Can Be Used For Different Sophisticated Robotic Applications. The Controlling Device For The Robotic Controlling In The Project Is A Microcontroller. The Data Sent From Android Mobile Phone Over Wi-Fi Will Be Received By Wi-Fi Module Connected To Microcontroller.

V. Working

The Proposed System Allows The User To Have A Control Over The Mobile Wi-Fi Option And The Wifi Esp8266 Mobile Application. The Working Of Pick And Place Robot Begins With The Power Supply Which Is Generated From A 12v Rechargeable Li-Ion Battery And It Is Passed To



The 12v Power Supply Board And This Board Is Connected To 8051 Microcontroller.

Ultrasonic Sensors (Hc Sr04) Are Placed Both At Front And Back Side Of The Robot. These Sensors Help The Robot To Detect The

Objects In Its Pathway And Thus, Changes Its Direction. Two Types Of Servo Motors Are Connected With The L298n Motor Driver. One, 8 Rpm Servo Motor, That Is Used For The Hand Movements Of The Robot And The Other, 120 Rpm Servo Motor Is Used For The Wheel Rotation. 8266 Wi-Fi Module Is Used For Accessing Wi-Fi Network Of The 8051 Microcontroller. In Addition, Pam8043 5a Audio Amplifier, Speaker And O-Led Are Connected With The 8266 Wi-Fi Module To Showcase The Output Of Programmed Sentences. The User Can Also Control The Robot Using The Mobile Application Through Wi-Fi By Connecting The Robot To The Power Supply.

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Vi. Conclusion

Robotic Pick And Place Automation Increases Production Rates While Accelerating The Process Of Picking Up Items And Setting Them In New Locations. These Pick-And-Place Robots Are More Precise And Don't Get Tired While Doing Labor

Intensive Or Tricky Movements That Can Be Challenging For People. There Is No Substitute For A Pick And Place Robot System In Terms Of Uniformity, Quality, And Reproducibility. Additionally Adaptable, These Systems Can Be Reprogrammed And Customized To Offer Customers A Variety Of Applications.

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