Automatic Pick And Drop Helping Robot

[1]G.T.Nandhini,[2]V.Megasri,[3]T.Jeevitha, [4]S.Sandhiya, [5]S. Saravanan

[1,2,3]U.G. Scholar, [4]Assistant Professor, [5]Professor,

Department of Electrical and Electronics Engineering, Muthayammal Engineering College (Autonomous),

Rasipuram 637408, Tamil Nādu, India.

Abstract: In the present pandemic situation constant monitoring of patient's body parameters such as temperature, pulse rate and oxygen level etc. becomesdifficult to nurses. Hence to overcome this we implemented a robot which can monitor and assist the patient using Robotic Arm. In our paper we are monitoring pulse rate, oxygen level and temperature of the patient by using respective sensors and also with the help PI camera capturing live image or video of the patient and can be monitored continuously. If any changes in patient's physical conditions it will be uploaded to cloud and alerts monitoring person through SMS. Here the robot can assist the patients by supplying medications, juice & fruits using Robotic Arm. By using BLUEDOT app the wheels can be moved toRIGHT,LEFT, FORWARD & BAKWARD and the robotic arm in the developed system has five Degree of Freedom (DOF), to operate this robot arm MIT inventor app is used. Hence it removes the problem of monitoring the patients suffering from communicable diseases.

**Keywords: Robotic Arm, Temperature sensor, pulsesensor, ArduinoUNO**

I. INTRODUCTION

As the technology is improving day by day, life span of people is also increasing gradually which leads to the population increase; it became a necessity to monitor the patient's health conditions of people for their healthy lifestyle. Improving health care has become one of the most important factors in medical industry. Withoutquality monitoring it is impossible to monitor the conditions of patients, though there are millions of medical centers across the world. It's difficult there to provide attention to each and every patient, especially patients who are suffering from communicable diseaseslike Covid-19, Hepatitis B. It is practically very difficult to monitor the conditions of those patientsbecause of fear of infection. According to recently conducted survey 122 per 100,000 die because of lack of attention during their bedridden time. Thus patient assistance and monitoring becomes an important thing to meet the objective. Achieving patient satisfaction. So the current method of providing assistance and monitoring patient is not satisfied, Hence medical industry is looking for new advancement in technology to overcome the above mentioned problem. Our paper proposes a Robot which continuously monitors the conditions of patients and thus became advancement in medical industry. Health is the one of the global challenges for humanity. Recently, the patient monitoring systems is one of the major advancements because of its advanced technology. Inthe traditional approach they need to visit the patient's ward for checking Active hospitals.

II. PROPOSED WORK

In this methodology section, it contains two parts such as hardware and software requirements. Where all the parts are assembled to accomplish the function of monitoring and assistance task. Our proposed Robotic system is designed to perform task based on the instructions provided by the person who is controlling the systemin this paper, we are using Raspberry pi 3 module forthe communication between the robot and themonitoring person. Robot are connected with the motors, driven by the L298 Motor drivers which in turn, drives the wheels of our proposed Robot, operated by Android app known as Blue dot with the established Bluetooth connection with raspberry pi module. Initially the Robot starts to move, Pi camera which is connected to the raspberry pi module used to capture live streaming of thesurroundings. Sensors such as MLX90614 used for contactless temperature measurement of the patient, MAX30102 Finger pulse sensor which is connected to Arduino UNO for analog to digital conversion areused for measuring Pulse rate, oximetry of the patient respectively.

Fig.1.Block Diagram
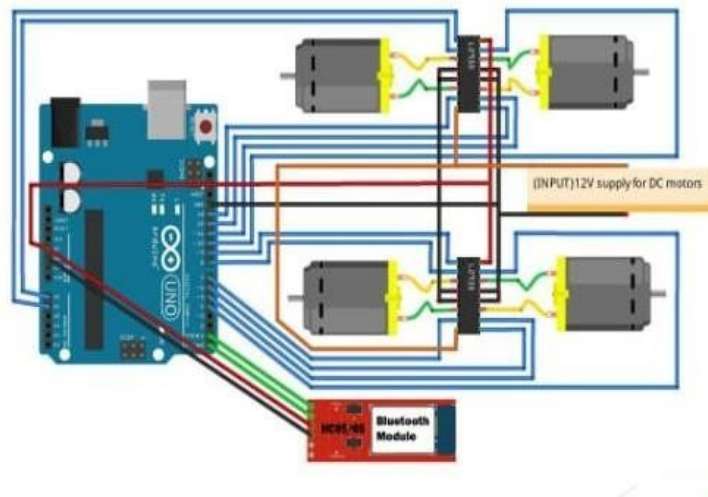
III. HARDWARE REQUIREMENTS

DC engine as displayed in the beneath figure utilizes Direct Current to create mechanical rotational development. At the point when it changes over electrical energy into mechanical energy then it is called as DC engine and when it changes over mechanical energy into electrical energy then it is called as DC generator. The functioning standard of DC engine is relies upon the way that when a current conveying conductor is set in an attractive field, it encounters a mechanical power. Its revolution bearing relies upon Fleming's Left Hand Rule. The figure shows dc engine which is utilized to make development. In this system, two dc motors are used which can be driven by motor driver module.

Motor Drive Module:

PI cannot drives the dc engine straight forwardly. The current and voltage esteems are not coordinated with regulator and dc engines. So engine driver is given to drive the engine. The L298N displayed in figure 4 is an incorporated single circuit in a 15 lead multi watt and Power bundles. Due to its a high ebb and flow, high voltage with double full-connect driver which is intended to acknowledge standard TTL rationale level sand drive inductive loads like DC, venturing engines, transfers, solenoids. Two empower inputs are given to dynamic or de active the gadget autonomously. In each extension the producers of the lower semiconductors are associated together and the individual outer terminal can likewise be utilized for the association of an outside detecting resistor. Supply input is likewise given to that, so the rationale works at a lower voltage.

Arduino UNO:

Arduino UNO is here used as analog to digital coverts since Raspberry capable of accepting only digital inputs. It is belonging to the mega processor family.

Fig.2. Arduino UNO

It has 6 analog inputs and 14 digital pins works at the frequency of 16 Mhz. It consists of a power jack, USB connection and a reset button. It can able to read the input whenever it reads the input the light will glow in the sensor, and it sends the message then this message is become to an output.

Max 30102 pulse sensor:

It is used to measure the heartbeat of the patient. It has a programmable sample rate and LED power for power saving mode. It has – 40°c to +85°c operating frequency range. This device can be turn off by a software without using standby current and it is highly sensitive device.
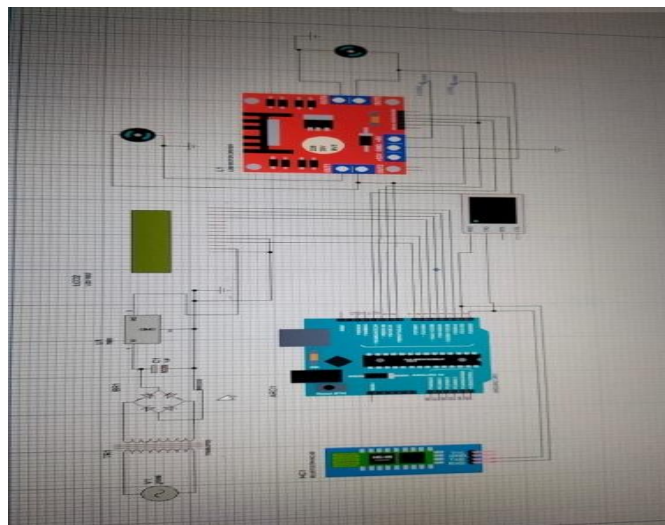
IV. SIMULATION RESULTS

Fig.3.Simulation Result

The components like both hardware and software and hardware's are attached to it. Hardware's like Motor drive, Bluetooth module, Arduino, wheels are connected to it and c programming is used here by pressing the LEFT, RIGHT, UP, DOWN in our mobile phones. Then it can rotate and round using the instructions we are giving to the mobile phones. There are four wheels which can rotate by our instructions and the battery which works on our instructions we are giving and then it will move around every side. The experimental results for this have come very sharply with accurate precisions. We can use this by pressing the LEFT, RIGHT, UP, DOWN in our mobile phones. Then it can rotate and round using the instructions we are giving to the mobile phones. There are four wheels which can rotate by our instructions and the battery which works on our instructions we are giving and then it will move around every side.

Fig.4. Hardware Implementation

REFERENCES

[1]   P.Shubha, M.Meenakshi, "Design and Implementation of Health Care Assistive Robot", 5th International conference on advanced computing Communication systems(ICACCS), 2019.

[2]   Mohammad Farag, Mohammad Hayyan Alsibai, "Grasping and positioning tasks for selective compliant Articulated Robotic Arm using objective Detection and Localized preliminary Results", 6th International conference on Electrical and Electronics Engineering (ICEEE), 2019.

[3]   Yi Zhng, ZhiCheng Xiao, Xuex Yuan, "Obstacle avoidance of Two-wheeled MobileRobot based on DWA algorithm", Chinese Automation Conference (CAC), 2019.

[4]   Stephan Muhlbacher - Karrer, Mathias Brandstotter, "Contactless Control of a kinematically redundant serial manipulator using tomographic sensors", Published in IEEE Robotics and Automation, Volume : 2, Issue :2,April2017.

[5]   Victor Ababii, Viorica Sudacevschi,"Sensor network based on mobile Robot", International conference on Development andApplication System (DAS), 2014.

[6]   Ali Ravari, Ahmad Fakharian, "Path tracking and Obstacle avoidance of a FPGA based mobile Robot (MRTQ)algorithm", 13th Iranian Conference on Fuzzy Systems (IFSC), 2013.

[7]   V.Dhinesh, T.Premkumar, S.Saravanan and G.Vijayakumar," Online Grid Integrated Photovoltaic System with New Level Inverter System" International Research Journal of Engineering and Technology (IRJET), Vol.5, Issue 12, pp.1544-1547, 2018.

[8]   J.Vinoth, T.Muthukumar, M.Murugagndam and S.Saravanan," Efficiency Improvement of Partially Shaded PV System, International Journal of Innovative Research in Science, Engineering and Technology, Vol.4, Special issue 6, pp.1502-1510, 2015.

[9]   M.B.Malayandi, Dr.S.Saravanan, Dr. M.Muruganandam, "A Single Phase Bridgeless Boost Converter for Power Factor Correction on Three State Switching Cells", International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Special Issue 6, pp. 1560-1566, May 2015.

[10]   A.Sasipriya, T.Malathi, and S.Saravanan, "Analysis of Peak to Average Power Ratio Reduction Techniques in SFBC OFDM System" IOSR Journal of Electronics and Communication Engineering (IOSR-JECE), Vol. 7, No.5, 2013.

[11]   P.Ranjitha, V.Dhinesh, M.Muruganandam, S.Saravanan, "Implementation of Soft Switching with Cascaded Transformers to drive the PMDC Motor", International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Special Issue 6, pp. 1411-1418, May 2015.

[12] C.Sowmiya, N.Mohanandhini, S.Saravanan and M.Ranjitha,"Inverter Power Control Based On DC-Link Voltage Regulation for IPMSM Drives using ANN" International Research Journal of Engineering and Technology (IRJET), Vol.5, Issue 11, pp.1442-1448, 2018.

[13] N.Yuvaraj, B.Deepan, M.Muruganandam, S.Saravanan, "STATCOM Based of Adaptive Control Technique to Enhance Voltage Stability on Power Grid", International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Special Issue 6, pp. 1454-1461, May 2015.

[14] P.Manikandan, S.Karthick, S.Saravanan and T.Divya," Role of Solar Powered Automatic Traffic Light Controller for Energy Conservation" International Research Journal of Engineering and Technology (IRJET), Vol.5, Issue 12, pp.989-992, 2018.

[15] R.Satheesh Kumar, D. Kanimozhi, S. Saravanan, "An Efficient Control Scheme for Wind Farm Using Back to Back Converter," International Journal of Engineering Research & Technology (IJERT), Vol. 2, No.9, pp.3282-3289, 2013.

[16] K.Prakashraj, G.Vijayakumar, S.Saravanan and S.Saranraj, "IoT Based Energy Monitoring and Management System for Smart Home Using Renewable Energy Resources," International Research Journal of Engineering and Technology, Vol.7, Issue 2, pp.1790-1797, 2020.

[17] J Mohammed siddi, A. Senthil kumar, S.Saravanan, M. Swathisriranjani, "Hybrid Renewable Energy Sources for Power Quality Improvement with Intelligent Controller," International Research Journal of Engineering and Technology, Vol.7, Issue 2, pp.1782-1789, 2020.

[18] S. Raveendar, P.M. Manikandan, S. Saravanan, V. Dhinesh, M. Swathisriranjani, "Flyback Converter Based BLDC Motor Drives for Power Device Applications," International Research Journal of Engineering and Technology, Vol.7, Issue 2, pp.1632-1637, 2020.

[19] K. Manikanth, P. Manikandan, V. Dhinesh, Dr. N. Mohananthini, Dr. S. Saravanan, "Optimal Scheduling of Solar Wind Bio-Mass Systems and Evaluating the Demand Response Impacts on Effective Load Carrying Capability," International Research Journal of Engineering and Technology, Vol.7, Issue 2, pp.1632-1637, 2020.

[20] T.R. Vignesh, M.Swathisriranjani, R.Sundar, S.Saravanan, T.Thenmozhi," Controller for Charging Electric Vehicles Using Solar Energy", Journal of Engineering Research and Application, vol.10, Issue.01,pp.49-53, 2020.

[21] V.Dhinesh, Dr.G.Vijayakumar, Dr.S.Saravanan," A Photovoltaic Modeling module with different Converters for Grid Operations", International Journal of Innovative Research in Technology, vol.6, Issue 8, pp.89-95, 2020.

[22] Dhinesh, R. Raja, S. Karthick, Dr. S. Saravanan," A Dual Stage Flyback Converter using VC Method", International Research Journal of Engineering and Technology, Vol.7, Issue 1, pp.1057-1062, 2020.

[23] G. Poovarasan, S. Susikumar, S. Naveen, N. Mohananthini, S. Saravanan," Study of Poultry Fodder Passing Through Trolley in Feeder Box," International Journal of Engineering Technology Research & Management, vol.4, Issue.1, pp.76-83, 2020.

[24] C. Sowmya, N. Mohananthini, S. Saravanan, and A. Senthil kumar," Using artificial intelligence inverter power control which is based on DC link voltage regulation for IPMSM drives with electrolytic capacitor," AIP Conference Proceedings 2207, 050001 (2020); https://doi.org/10.1063/5.0000390, Published Online: 28 February 2020.

[25] M.Revathi, S.Saravanan, R.Raja, P.Manikandan," A Multiport System for A Battery Storage System Based on Modified Converter with MANFIS Algorithm," International Journal of Engineering Technology Research & Management, vol.4, issue 2, pp.217-222, 2020.

[26] D Boopathi, S Saravanan, Kaliannan Jagatheesan, B Anand, "Performance estimation of frequency regulation for a micro-grid power system using PSO-PID controller", International Journal of Applied Evolutionary Computation (IJAEC), Vol.12, Issue.4, pp.36-49, 2021.

[27] V Deepika, S Saravanan, N Mohananthini, G Dineshkumar, S Saranraj, M Swathisriranjan, "Design and Implementation of Battery Management System for Electric Vehicle Charging Station", Annals of the Romanian Society for Cell Biology, Vol.25, Issue.6, 17769-17774, 2021.

[28] A Senthilkumar, S Saravanan, N Mohananthini, M Pushparaj, "Investigation on Mitigation of Power Quality Problems in Utility and Customer side Using Unified Power Quality Conditioner", Journal of Electrical Systems, Vol.18, Issue.4, pp.434-445, 2022.

[29] V Kumarakrishnan, G Vijayakumar, D Boopathi, K Jagatheesan, S Saravanan, B Anand," Frequency regulation of interconnected power generating system using ant colony optimization technique tuned PID controller", Control and Measurement Applications for Smart Grid: Select Proceedings of SGESC 2021, pp..129-141.

[30] C Nagarajan, B Tharani, S Saravanan, R Prakash," Performance estimation and control analysis of AC-DC/DC-DC hybrid multi-port intelligent controllers based power flow optimizing using STEM strategy and RPFC technique", International Journal of Robotics and Control Systems", Vol.2, Issue.1, pp.124-139, 2022.

[31] G Vijayakumar, M Sujith, S Saravanan, Dipesh B Pardeshi, MA Inayathullaa," An optimized MPPT method for PV system with fast convergence under rapidly changing of irradiation", 2022 International Virtual Conference on Power Engineering Computing and Control: Developments in Electric Vehicles and Energy Sector for Sustainable Future (PECCON), pp.1-4.

[32] C Nagarajan, K Umadevi, S Saravanan, M Muruganandam, "Performance Analysis of PSO DFFP Based DC-DC Converter with Non Isolated CI using PV Panel", International Journal of Robotics and Control Systems' Vol.2, Issue.2, pp.408-423, 2022.

[33] VM Geetha, S Saravanan, M Swathisriranjani, CS Satheesh, S Saranraj, "Partial Power Processing Based Bidirectional Converter for Electric Vehicle Fast Charging Stations", Journal of Physics: Conference Series, Vol.2325, Issue.1, pp.012028, 2022.

[34] M Santhosh Kumar, G Dineshkumar, S Saravanan, M Swathisriranjani, M Selvakumari, "Converter Design and Control of Grid Connected Hybrid Renewable Energy System Using Neuro Fuzzy Logic Model", 2022 Second International Conference on Computer Science, Engineering and Applications (ICCSEA), pp.1-6, 2022.

[35] C Gnanavel, A Johny Renoald, S Saravanan, K Vanchinathan, P Sathishkhanna, "An Experimental Investigation of Fuzzy-Based Voltage-Lift Multilevel Inverter Using Solar Photovoltaic Application", Smart Grids and Green Energy Systems, pp.59-74, 2022.

[36] C Nagarajan, K Umadevi, S Saravanan, M Muruganandam, "Performance investigation of ANFIS and PSO DFFP based boost converter with NICI using solar panel", International Journal of Engineering, Science and Technology, Vol.14, Issue.2, pp.11-21,2022.

[37] K Priyanka, N Mohananthini, S Saravanan, S Saranraj, R Manikandan, "Renewable operated electrical vehicle battery charging based on fuzzy logic control system", AIP Conference Proceedings, Vol.2452, Issue.1, pp.030007, 2022.