

MECHATRONICS PROJECT LIST – 2020**1. Wheel alignment system**

A computer based wireless automobile wheel alignment measurement system using accelerometer is presented in this paper, which has the advantages of simple circuit, low cost, high resolution with high working reliability. The causes and effects of improper wheel alignment by traditional methods are analyzed in the model. In this system wireless transmission techniques are adopted to transmit data between measuring unit and computer. This makes the measurement operation much easier. This paper presents unique and innovative use of accelerometer for the measurement of automobile wheel parameters, such as camber and toe. The hardware and software realizations are also explored in this paper. The system practical applications show that its performance meets the design requirements.

2. Campus cab

The campus cab project consists of two modules i.e. the transmitter module and the receiver module. The transmitter module is used to select the destination to which the user wants to move. CAB CALL Switches are connected to the RF encoder. The encoded output is then transmitted through the RF transmitter. At the receiver end, the received signal is decoded and then fed to the controller. On receiving a sequential digital data, the vehicle starts moving; using the line following technique and it will continuously monitor the RFID tag of selected place. Once the RFID tag is found, the vehicle stops and allows the users to get into it. Then the user will have an option to select the destination in the cab through switches. Once selected, the cab starts moving towards the destination. Once the entry-exit process is done, the cab starts moving towards its parking place.

3. Waste segregation system

The rapid growth in the population has also led to the surge in the volume of waste being generated on a daily basis. This increase in the generation of waste due to continuous growth in the urbanization and industrialization has become a severe problem for the local and the national government. It is also posing a serious problem for the local authorities to manage the wastes being dumped everywhere as landfill. To ensure the minimal risk to the environment and human health, it is necessary to take meticulous measures when segregating and transporting waste. Segregation of waste in a proper manner brings to the limelight actual economic value of the waste. The traditional method used for segregating of waste in India is through rag pickers which are time-consuming and can have adverse effects on the health of the people who are exposed to such wastes. Here we propose the use of a Waste Segregator which is cheap and also an easy to use solution for segregation of household waste. It is designed to segregate the waste into three categories viz. metallic, wooden and plastic waste. The system makes use of a combination of laser and a light sensor for the segregation of wooden, rock kind waste, inductive proximity sensor for the detection of metallic waste and rest of the waste such as transparent plastics, bottles are collected in the final bin. LCD display for displaying the result of segregation. It is evident from experimental reports that segregation of waste using this method has been successful.

4. Humanoid robot for restaurant automation

This paper describes the design and development of a waiter robot which is considered as a possible solution to restaurant automation. The robotics technology is replacing manual work at a fast pace throughout the world. In classical café, restaurants and hotels, the customers face a lot of problems due to congestion at peak hours, unavailability of waiters and due to manual order processing. These shortcomings can be handled by using a restaurant automation system where “Waiter Robots” are used for ordering food and beverages. The desired order is also transmitted on wireless network to the kitchen via menu bar. The menu bar is based on the LCD, Keypad and the Bluetooth module. The customer places the order using electronic menu bar. This order is sent to the kitchen and reception using communication network. The waiter robot then transfers food from the kitchen to the customer.

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5. Automatic irrigation vehicle
<p>The plant needs to be watered regularly, human intervention is necessary to provide water to the plant. In this paper, an Automatic Irrigation System using robotic vehicle with Arduino development board is modelled. In this Plant Watering System, seed sowing, soil moisture sensor monitors the moisture level in the soil and if the moisture level is low, the rain sensor is monitored, if it is raining then no function is performed and if not then Arduino switches on a water pump to provide water to the plants. Before proceeding towards a plant, the Robot will check the obstacle in its path and will trigger the Buzzer in case of any obstacle. Then the movement of the robot can be controlled remotely using Voice Command. This system is very useful in farms, gardens, home, Median Strips of highways, etc. This system is completely automated and there is no need for any human intervention.</p>
6. Human detection robot
<p>This paper deals with the tracking of persons in a human cluttered environment. It is performed by an active perception system, consisting of a camera mounted on a pan-tilt unit and a 360° RFID detection system which are embedded on a mobile robot. Particle filters enable the fusion of heterogeneous data into the proposal distribution from which the particles are sampled. The information provided by the tracker is then used to build sensor-based dedicated control laws in order to make the robot follow the RFID tagged person. Finally, experiments on our mobile robot are presented in order to highlight the relevance and complementarity of the developed perceptual functions.</p>
7. Hand gesture based wheelchair
<p>This paper is to develop a wheelchair control which is useful to the physically disabled person with his hand movement or his hand gesture recognition using Acceleration technology. Various Projects have been undertaken previously to develop automatic wheelchair using various technology like button control, Retina controlled. But none have such combined features like Navigation, Dark Room Sensor, Automatic messaging, and Obstacle detector. This project will make the user life more comfortable and more independent and is also cost effective and requires low maintenance. Tremendous leaps have been made in the field of wheelchair technology. However, even these significant advances haven't been able to help quadriplegics navigate wheelchair unassisted. It is wheelchair which can be controlled by simple hand gestures. It employs a sensor which controls the wheelchair hand gestures made by the user and interprets the motion intended by user and moves accordingly. Microcontroller controls the wheelchair directions like LEFT, RIGHT, FRONT, and BACK. The aim of this paper is to implement wheelchair direction control with hand gesture reorganization. The features included in this project are, We are using touch plate sensors to control wheelchair movement, Obstacle detection with the message on mobile via Bluetooth and deviation from the obstacle, Panic Switch with the alert message to the near ones, Illumination of the LEDs in the dark places, Navigation through Google maps.</p>
8. RFID/ biometric based ration dispenser
<p>This paper proposes a novel application for automating the Public Distribution System. The Government of India supplies essential commodities for everyday use like food grains (rice, wheat), kerosene (fuel for cooking) etc. to a large number of people by an elaborate machinery called Public Distribution System (PDS). This system currently works on manual processes. In this work, it is proposed that Smart Automated Ration Disbursal System (SARDS) using IoT replace the manual processes in PDS. This system consists of Embedded Controllers for online biometric authentication of the consumer, smart measuring for accurate disbursal of the commodities and real-time updating of data on the server. A prototype system to demonstrate its working is built using Arduino. An automatic dispensing system for solid as well as liquid commodity is fabricated and interfaced with the controllers using solenoid valves and sensors. Robust feedback is built into the system using sensors for accurate disbursal of material and detection of theft. Finally, experimental results showing accuracy of delivery of material</p>

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	<p>and time required to process one consumer request are tabulated and analyzed. This system, when deployed in actual field, is expected to be operational 24x7 and ensure safe, secure, fast and corruption-free distribution of Ration commodities to the general public</p>
9. Covid symptoms monitoring humanoid robot	<p>This paper describes the evolving role of robotics in healthcare and allied areas with special concerns relating to the management and control of the spread of the novel corona virus disease 2019 (COVID-19). The prime utilization of such robots is to minimize person-to-person contact and to ensure cleaning, sterilization and support in hospitals and similar facilities such as quarantine. This will result in minimizing the life threat to medical staff and doctors taking an active role in the management of the COVID-19 pandemic. The intention of the present research is to highlight the importance of medical robotics in general and then to connect its utilization with the perspective of COVID-19 management so that the hospital management can direct themselves to maximize the use of medical robots for various medical procedures. This is despite the popularity of telemedicine, which is also effective in similar situations. In essence, the recent achievement of the Korean and Chinese health sectors in obtaining active control of the COVID-19 pandemic was not possible without the use of state of the art medical technology.</p>
10. Solar Powered Robot for Pesticides Spraying & Grass Cutting	<p>A Solar Powered Automatic Grass Cutting And Pesticide Spreading robot project is mainly proposal for reduce the manpower and usage of electricity. Solar plate is used to provide the source to the battery charging. It is an automated system for the purpose of grass cutting. The source is drive from the solar energy by using solar plate. The system control is done by the Arduino UNO R3. Automation is achieved by using sensors and Arduino UNO R3. Wheels and cutting operations are done using dc motors. DC battery is utilized for powering and standby mode operation of the system. The whole supply is provided through the battery and to charge the battery charger circuit is used to provide the charging for the battery. Also the second application is that the spreading of pesticide here we used the water pump with spreading nozzle.</p>
11. AUTOMATED MEDICAL DISPENSING SYSTEM USING ROBOTICS	<p>In today's world, people are suffering from several diseases and due to this the need for medication has increased exponentially. An average person takes 2-3 tablets a days and there is a chance for the person to let slip from the memory. In order to avoid such mistakes an automated system for dispensing medicines is required. In the paper, we present a prototype robotic system that automatically dispenses medicines to the patients in the hospital. The robot model which carries medicines for patients will deliver them at the respective time. The robot uses line follower method to deliver the pills to the patient's room. In this way the medication errors can be prevented and the need for the patient to remember their medicines is not needed anymore</p>
12. Voice controlled intelligent wheel chair	<p>In order to assist physically handicapped persons, we developed a voice controlled wheelchair. The user can control the wheelchair by voice commands, such as "Forward". A grammar-based recognition parser named "Julian" is used in our system. Three type commands, the basic reaction command, the short moving reaction command, and the verification command, are given. We experimented speech recognition by Julian, and obtained a successful recognition rate 98.3%, 97.0% of the movement command and the verification command, respectively. The running experiment with three persons was carried out in the campus room and the utility of our system is shown.</p>
13. Packed food vending machine.	<p>Vending machine is a coin operated machine for selling merchandise. Vending machine provides various product such as snacks, beverages, water, tickets, and others product. Vending machine has many benefits such as no need human energy, flexible in time, and</p>

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saving time.

Firstly vending machine benefit is not using any human energy on it. The vending machine is managed by operator. Machine manufacturers sell machines to the operator that decides which payment system. The labour work can be saving from having operators that's operated on it.

Secondly, vending machine is flexible in time that does can operate in 24 hours a day, seven days a week; each consuming between 2,500 to 4,400 kWh per year. The vending machine can be operated anytime although that was holiday or weekend.

14. Automatic paint mixing machine

Detection of desired colour and its automated generation can be very useful. Each colour has specific wavelength in visible spectrum ranging from 400nm-700nm. Based on its wavelength and other properties a machine could be developed that could utilize the principle of robotics to automatically mix the primary colors viz. red, blue and green (RGB) in required proportions to obtain the similar color as required. The automated system can be further developed to spray-paint a given area with the help of robotic arm. This fully automated system will definitely have the following benefits. Improved quality: with an automated robotic spray painting arm, we can expect to create a more reliable, high quality end product. The robotic spray gun always remains at the proper distance away from target object hence provide accessibility in hard to reach areas with ease. Conserve paint: it can cut down the material cost as it is precise and does not overspray. Play-it-safe: avoid exposure to harmful toxins. Save energy: Robotic spray allow for more compact and precise painting which requires less physical effort

15. Remote controlled camera assisted pick and place robot

The design analysis of a Remote Controlled "Pick and Place" Robotic vehicle has been presented in this paper. This work unravels the fact that man would always want to adhere to safety precautions at workplace and even in its environment, to be able to handle some specific tasks, like sending the robotic vehicle to hazardous environment to obtain samples for chemical analysis. A typical Robotic Vehicle is capable of travelling over various terrains and traversing obstacles. In one embodiment, the design in this work includes a Robotic arm of five Degree of Freedom with its base resting directly on top of the vehicle, a body having four drive wheels coupled to the ends thereof. The wheels are selectively powered to propel the vehicle. The design methodology involves the hardware, software part and implementation of both designs. A prototype of the Remote Controlled "Pick and Place" Robotic vehicle was built to validate design specifications. The results obtained were very satisfactory. The use of Robots is highly recommended for Industries especially for safety and productivity reasons.

16. Voice Operated Intelligent Fire Extinguisher Vehicle

This paper shows the investigation and use of voice operated fire extinguisher vehicle with water jet spray. The vehicle is controlled through related talk input. The vernacular information allows a customer to team up with the robot which is unmistakable to an extensive segment of the overall public. The upsides of voice operated robots are sans hands and fast data input operations. The voice affirmation structure is set up in a way that the robot is controlled in perspective of the rule through the Speech Commands. The whole structure contains three subsystems, the discourse acknowledgment framework, transmitter range besides, the authority fragment (on vehicle). The results exhibit that proposed robot is prepared for controlling fire, sidestepping obstacles in addition, perception the significance of speech requests.

17. Automatic Grass cutter/ Lawn mover

In subsisting system the motored powered engines are utilized for the grass cutting. The fundamental downside of the subsisting framework is the different individual is required to operate the machine. In any case, in our framework we actualize the BLUETOOTH module. Right now module is utilized to control the entire system movement. According the data received from the Bluetooth the vehicle move. The framework is utilized for the House gardens, little ranches, nurseries, play areas and so

forth.
18. Dual Controlled, Solar Powered, Smart Pesticide & Fertilizer Spraying Robot
<p>With the increasing population day by day the focus on effective and agricultural methods is getting more attention. The technological advancements are used to required scale in industrial sector, but agricultural sector still uses obsolete methods. Thus with this as a major area of concern, this project deals with the development of wireless dual control solar powered smart insecticide and fertilizer spraying machine to help Farmers. The proposed machine should be able to spray insecticides pesticides and fertilizers using a tank provided onto the machine. The dual mode control permits the control of machine using remote controller. In addition the proposed machine should have the ability to adjust the height of spraying for different crops.</p>
19. Automatic floor cleaning robot
<p>Households of today are becoming smarter and more automated. Home automation delivers convenience and creates more time for people. Domestic robots are entering the homes and people's daily lives, but it is yet a relatively new and immature market. However, a growth is predicted and the adoption of domestic robots is evolving. Several robotic vacuum cleaners are available on the market but only few ones implement wet cleaning of floors. The purpose of this project is to design and implement a Vacuum Robot Autonomous and Manual via steering. Vacuum Cleaner Robot is designed to make cleaning process become easier rather than by using manual vacuum. The main objective of this project is to design and implement a vacuum robot prototype by using Arduino Mega, Arduino Shield, LDR Sensor, Real Time Clock, Motor Shield L293D, Ultrasonic Sensor, and IR Sensor and to achieve the goal of this project. Vacuum Robot will have several criteria that are user-friendly.</p>
20. RF based Smart wheelchair
<p>In this Paper We provide a wheel chair that operates automatically with a minimal human interaction or based on RF control and is also capable of communicating messages to the distant relatives or ambulance in case of Emergency. This system can be used by Physically challenged or the old age People both indoor and outdoor. The proposed system comprises of a wheelchair, RF module and Emergency situation communicating module (using GSM and GPS).</p>
21. BLDC motor driver mixer grinder with increased power efficiency
<p>In this paper we are going to discuss about the implementation of BLDC motor for the residential mixer and grinder in place of universal motor. Brushless electric direct current (BLDC) motors also known as electronic commutated motor and powered by dc power via an inverter or switching devices which produce ac power output. In the future energy shortage will be the one of the main problem. So we must replace the traditional equipments with the new energy efficient technology. Residential devices are one of the key area for energy conservation because they are used daily basis. Every home is equipped with the mixer and grinder for the shaking, mixing, grinding, chopping etc</p>
22. Real time Rain sensing automatic wiper
<p>Generally, working of a car wiper is based on the manual switching. In this mechanism, the driver has to switch ON the power button to energize the wiper. It is difficult for the driver to concentrate simultaneously on the driving and on the wiper. Though it is not much difficulty in normal conditions but it is very difficult in raining conditions and snowing conditions. To eliminate this difficulty an automatic wiper system with rain sensing technology is implemented. In this automatic wiper system, a rain sensor, a microcontroller and a driver integrated circuit (IC) is used to convert the manual operation into automatic operation. When water falls on the rain board of the rain sensor, the sensor sends the signal to the microcontroller regarding the data and then the microcontroller processes the data and energizes the driver IC to make the required motion. By taking the signal from the microcontroller the driver IC drives the servo motor of the wiper to clean the car glass. With these modifications, automatic cleaning of the car glass can be done without the involvement of the driver.</p>

23. Walking assistance

This paper gives the rules for setting up a framework for thinking about the trouble in rebounding of the stroke patients neurons by current arrangement, the reclamation robots are by and large thought to empower the patient to reduce impact caused by the stroke disease. In this wander, we display the layout and usage of an exceptional control system for a clever raise, a remedial device that is used as a piece of rebounding of walking. The control system includes an extraordinary human machine interface. Consequently, just by moving or turning its body it allows the human to normally control the system . This report contains an outline of the whole system, past work done and embedded structure based central control system. The proposed control system interface is beyond question normal and simple to get by the customer.

24. Automatic vehicle lifting jack

Car jacks usually use mechanical advantage to allow a human to lift a vehicle by manual force. More powerful jacks are using hydraulic power to provide more lift over greater distances. This paper presents the development of the car jack for emergency use with using internal cigarette lighter power (12volts). The automatic easy car-jack utilizes this power source to save individuals having to exert any energy. To increase the lifting power in order to ensure the power is adequate, gear ratio was used. The car jacker was developed utilizing the Solidworks and its analyses to check the safety factor and force acting. The fabrication work has been done with milling and grinding machine. The car jacker will be tested and it predicted to have enough power to lift and holding the car as normal car jacker.

25. Mobile phone controlled smart wheelchair

Wheelchairs are used by the people who cannot walk due to physical illness, injury or other disability. Now a days development promises a wide scope in developing smart wheelchair. This paper is to describe an intelligent wheelchair using smart phone is develop to control the rotation of wheel chair based upon voice and gesture movement for the physically challenged persons. In build voice and gesture function are used to control the wheelchair as well as by using smart phone reading SMS, E-mail, News. The sensor used is 8 in which 2 of them are IR sensors the remaining are for temperature, smoke detection, and light detection sensors. This system that allows the user to robustly interact with the wheelchair at different levels of the control and sensing. The system is divided into 3 main units Voice recognition through Android, Gesture recognition through Android, Motor control through signal conditioning. The system is based on grouping an android phone with a AVR micro-controller and sensors.

26. E-bike

A new model of power-assisted bicycle has been designed, set up and tested. The main innovative solutions for the pedelec prototype are described in the present paper: the electric motor position; the new mechanical transmission; the low cost measurement system of the driving torque; the special test rig. Differently from a common approach, in which the electric motor is located on one of the three hubs of the bicycle, the idea of the pedelec prototype consists of an electrical motor in the central position that, by means of a bevel gear, transmits the torque on the central hub. The other innovative solution is represented by the motion transmission from the motor to the pedal shaft, achieved by two different gearboxes: the first one is a planetary gearbox and the second one is a simple bevel gear. The pedelec prototype contains also a new low cost measurement system of the driving torque based on a strain gauge load cell located on one side of the rear wheel, between the hub and the frame. Moreover, a commercial cycling simulator has been suitably modified in order to properly install the different sensors for the measurement of the performance of the pedelec. The test rig is able to reproduce an aforethought route or paths acquired during road tests, to measure the performance of the e-bike in terms of instantaneous power and speed. The experimental test rig can simulate the resistant torque of a predetermined track and it aims to test and to optimize the control strategy available on the electronic control unit. The authors

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	have also conducted an environmental analysis of the developed pedelec, in particular comparing the e-bike with a thermal moped, in terms of environmental impact.
27. Coconut dehusking machine	<p>This paper presents the design and fabrication activities involved in developing an automated coconut de-husking machine. The main purpose of this machine is to eliminate the skilled operator involved in de-husking the coconut and to completely automate the dehusking and crown removing process. Although coconut dehusking machines have already been demonstrated in the work and also in some small-scale industries, the process is either manual or semi-automatic. A completely automated machine with manual loading and unloading of coconuts will yield productivity higher than the existing process. Because of that, the current work is mainly focused on an automated machine for dehusking and crown removing. Also, we can yield lot of useful and commercial products from coconut at various stages of its lifecycle. The machine aims at de-husking and removing the crown of the de-husked coconut of various sizes. In order to get to know about the different sizes of the coconut, various places are visited where exuberant yielding of coconuts are made. Also, dimensional data of coconuts have been collected. Based on the survey the maximum and minimum sizes of the coconut are determined. The machine is designed to accommodate different sizes of the coconut that are cultivated anywhere in the world. Also, various experiments have been conducted on both dry and mature coconuts in order to determine the force required to de-husk the coconut.</p>
28. Automatic cloth drying system	<p>Washing clothes, drying up the clothes are the routine to the majority of the people. However, most of the people claimed that the process of drying up the clothes is the most challenging part due to the unpredictable weather in India. This project introduces Hang –and –Go: A Smart Laundry Hanging System that can automatically detect the presence of rain and sunlight and intelligently provide shelter for the clothes to protect them from the rain. This project is began with the objectives of studying people’s experience in doing the laundry process at home and small business scale, investigate existing laundry hanging system, develop a low cost laundry hanging system for household usage and lastly evaluate the performance of the developed system. In this project, a prototype is constructed using the combination of several tools which include Lego Mindstroms EV3, Tetrax, and also Arduino. On top of that, the prototype is targeted for the household usage and also for small business scale use. In order to collect the users’ experiences, problems faced and their view on the suggested solution, the research methodology uses in this project are interview and survey. Survey result shows that majority of the people agreed that the Hang-and-Go is an efficient approach that would help busy people to dry their clothes without human supervision. A series of experiment were conducted to test the functionality of the system. As a conclusion, Hang-and-Go is an unmanned robotic approach to automatically improve human on their laundry process.</p>
29. IoT based Smart washing machine	<p>Internet of Things (IoT) is a going developments of the Internet by which ‘things’ communicate with each other or with a person. This design presents an intelligent system to monitor and control washing machine through internet by an IOT based wireless sensor network. Advanced Risc Machine (ARM) board is programmed so that it helps to communicate the information of sensor to IoT. A web server is created with help of PHP to monitor or control the machine from internet. This server can be accessed by a particular IP address or web address.</p>
30. Design and fabrication Stair climbing robot	<p>We have designed a multipurpose robot which can be used in various fields. The designed structure is an 8 wheeled, DC motor driven vehicle. The purpose of the vehicle is to climb up and down stairs in one direction (both forward and reverse). The polarity of voltage source is reversed using a switch then the vehicle can move in both forward</p>

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and backward directions. The gears in triwheel are designed to obtain same rpm of the driving shaft to the wheel. The basic operation of the vehicle during stair climbing, the front wheel compressing its spring then the energy accumulated in the spring helps the first wheel is to climb. When the front wheel of the tri-wheel contacts a stair, it stops rotating due to friction, which causes the entire assembly to rotate about the fixed wheel, pulling the robot onto the stair above. Finally, the last wheel can easily get on the step making the whole structure climbing the stair. We are using creo parametric for modelling of the robot and Ansys workbench for analysis of the robot.

31. Jewellery display unit with 360°

The design and fabrication of 360 degree Jewellery display unit using DC motor is done to display, progress, glorify display stand with an ultra-bright LED for beautify, energy-efficient illumination with a double direction rotation. This drives the top rotation in Omni directional to catch most eyesight on a table, counter, shelf, rack, shop window. 1.6RPM, Available rotation in clockwise direction or CCW direction, just press the on/off switch to change rotation direction. Designed for home, exhibition, store, shop and is great for display model, electronics, Jewellery , decoration and photography.

32. Ventilator for Covid pandemic

Corona virus Disease 2019 (COVID-19) threatens to overwhelm our medical infrastructure at the regional level causing spikes in mortality rates because of shortages of critical equipment, like ventilators. Fortunately, with the recent development and widespread deployment of small-scale manufacturing technologies like RepRap-class 3-D printers and open source microcontrollers, mass distributed manufacturing of ventilators has the potential to overcome medical supply shortages. In this study, after providing a background on ventilators, the academic literature is reviewed to find the existing and already openly-published, vetted designs for ventilators systems. These articles are analyzed to determine if the designs are open source both in spirit (license) as well as practical details (e.g. possessing accessible design source files, bill of materials, assembly instructions, wiring diagrams, firmware and software as well as operation and calibration instructions). Next, the existing Internet and gray literature are reviewed for open source ventilator projects and designs. The results of this review found that the tested and peer-reviewed systems lacked complete documentation and the open systems that were documented were either at the very early stages of design (sometimes without even a prototype) and were essentially only basically tested (if at all). With the considerably larger motivation of an ongoing pandemic, it is assumed these projects will garner greater attention and resources to make significant progress to reach a functional and easily-replicated system. There is a large amount of future work needed to move open source ventilators up to the level considered scientific-grade equipment, and even further work needed to reach medical-grade hardware. Future work is needed to achieve the potential of this approach by developing policies, updating regulations, and securing funding mechanisms for the development and testing of open source ventilators for both the current COVID19 pandemic as well as for future pandemics and for everyday use in low-resource settings.

33. Automatic guided vehicle for agriculture purpose

Development of automated guided vehicle plays a major role in engineering industries to improve the material handling technique for recent years. In this paper, an automated guided vehicle (AGV) includes a material transfer system located on the top and driving device at the bottom to move the vehicle as desired. The vehicle is a customised AGV in which it will do the special material handling task and also used for custom applications. The vehicle works on its own once the program is feed into the control device. The control device is common to both driving device and transfer device which are connected together. The control device operates the vehicle and maintains the ultimate process of automated guided vehicle. The technological advancements are used to required scale in industrial sector, but agricultural sector still uses obsolete methods. Thus with this as a major area of concern, this project deals with the development of

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wireless dual control smart seed sowing, mud levelling and watering machine to help Farmers. The proposed machine should be able to sow the seeds and water using a tank provided onto the machine. The dual mode control permits the control of machine using remote controller. In addition the proposed machine should have the ability to dig and level the mud as well.

34. Energy Efficient Ceiling Fan using BLDC Motor

A brushless DC (BLDC) motor is a synchronous electric Motor powered by direct current (DC) electricity having an electronics commutation system, rather than a mechanical commutator and brushes. In BLDC motors, current to torque and voltage to rpm have linear relationship. This linearity provides an excellent opportunity to use the BLDC motor in conventional ceiling fans. This project is aims at the practical implementation of BLDC motor as a ceiling fan and also introduced different types of speed control method for BLDC fan. This fan is implemented with three different modes of operations-manual mode, auto mode, and remote control mode. We can select the mode by using a mode selector switch. In each mode speed is controlled by different methods. When it is manual mode speed can be controlled by a potentiometer. If it is auto mode the speed is automatically changed depending on the room temperature, LM35 temperature sensor is used to sense the room temperature in auto mode. If remote control mode is selected the speed can be adjusted by using a remote controller. RF module-transmitter and receiver are used for remote control operation.