2018

ROBOTICS/MECHATRONICS PROJECT LIST 2018-2019

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6/20/2018

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Here is the list of project titles 2018 and 2019.

DOORS OF TECHNOLOGY:

- EMBEDDED SYSTEMS
- MICROCONTROLLERS / ARM /PIC / AVR
- WIRELESS TECHNOLOGIES
- ROBOTICS
- ARDUINO
- GSM & GPS/ ZIGBEE
- MATLAB / VLSI

- IEEE PROJECTS ON JAVA / DOT NET
- INTERNET OF THINGS
- ANDROID BASED PROJECTS
- PHP
- AND COMPLETE MECHANICAL FABRICATIONS
- MECHANICAL DESIGN AND ANALYSIS

Projects are available for all branches of **ENGINEERING, DIPLOMA, MCA/BCA, and MSc/BSc.**

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Technofist

Here we provided a **ROBOTICS/MECHATRONICS 2018 project lis**t with abstracts. we do train a student from basic level of robotics which includes basic robotics Classes, projects implementation, final project demo and final code explanations. If you have questions regarding these projects feel free to contact us. You may also ask for abstract of a project idea that you have or want to work on. The **own projects idea** for diploma and Engineering students can also encouraged here.

A robot is a reprogrammable, multifunctional manipulator designed to move material, parts, tools or specialized devices through variable programmed motions for the performance of a variety of task. It is the branch of engineering and science that includes mechanical engineering, electrical engineering, computer science, and others. Robotics deals with the design, construction, operation, and use of robots as well as computer systems for their control, sensory feedback, and information processing. In the field of agriculture, various operations for handling heavy material are performed. For example, in vegetable cropping, workers should handle heavy vegetables in the harvest season.

IEEE ROBOTICS PROJECT LIST 2018 AND 2019

	2018 – 19 IEEE TRANSCATIONS ROBOTICS/MECHATRONICS BASED PROJECT TITLES
TIR001	**TITLE** - DEVELOPMENT OF DATA ACQUISITION ROBOT FOR TOXIC ENVIROMENTAL MONITORING USING WSN – KROTO FINDER **ABSTRACT** - This project is mainly implemented for industrial applications. Mainly for detecting the damages inside the oil pipe which cannot be detected by human beings. Inside the pipe, there is very heavy temperature, pressure and toxic gases. So we are implementing a robot that have a camera, temperature sensor, pressure sensor etc. which is used to detect the crack and conditions inside the pipe. This data from all the high precision sensors will be transmitted using ZIGBEE protocol from the robot to the control station. The robot incorporates a wireless camera and the data from the camera is transmitted to TV monitor
TIR002	**TITLE** - SMART PHONE OPERATED MULTIPURPOSE AGRICULTURAL ROBOTIC

VEHICLE – AGRIBOT

ABSTRACT - This robotic vehicle is an agricultural machine of a considerable power and great soil clearing capacity. This multipurpose system gives an advance method to sow, plow, water and cut the crops with minimum man power and labor making it an efficient vehicle. The machine will cultivate the farm by considering particular rows and specific column at fixed distance depending on crop. Moreover the vehicle can be controlled through Bluetooth medium using a Android smart phone. The whole process calculation, processing, monitoring are designed with motors & components interfaced with microcontroller.

TIR003	

TITLE - CAMOUFLAGE TECHNIQUE BASED MULTIFUNCTIONAL ARMY ROBOT

ABSTRACT - Nowadays, many expenses are made in the field of defense in adopting primitive security measures to protect the border from the trespassers. Some military organizations take the help of robot in the risk prone areas which are not that effective when done by army men. These army robots are confining with the camera, sensors, metal detector and video screen. The main objective of our system is to get camouflaged including PIR sensor to trace the intruders. Thus the proposed system also uses IR sensor for obstacle detection.

TIW004	

TITLE - HAPTIC ROBOTIC ARM

ABSTRACT- Robots of the current generation have been used in fields isolated from the human society. They suffer major shortcomings because of their limited abilities for manipulation and interaction with humans. In order to represent the robotic technology in the field of human-machine interaction and wireless communication for allows interactivity in real-time with virtual objects it is very necessary to develop some or the other technology that makes the maximum use of robot to help people do their work in an efficient way in their day to day life.
The main objective of the project is to design and develop the Robot that is used to move using wireless system by recognizing hand motion that is controlled by haptic technology for virtual environment & human-machine systems capable of haptic interaction. Without risking human life or limb, this research has applications in many areas, including robot assisted surgery, simulation and training, rehabilitation, exploration of hazardous or remote environments, enabling technologies, manufacturing, design, mobile computing, and education.

TIW005	

TITLE - UNMANNED FIGHTER

ABSTRACT- Nowadays robots play an important role in human beings day-to-day life. And Life is very important. Soldiers form the backbone for their country and they are very precious gem to their country. So soldier's life becomes more valuable. So here is a project which performs the functions of a soldier like firing, walking into the field. With the help of sensors and wireless camera the robots acts as a soldier and the commands are given to the robot through android app.

TIW006	

TITLE - LIVE HUMAN DETECTING ROBOT FOR EARTHQUAKE RESCUE OPERATION

ABSTRACT- Natural calamities do occur and they are unstoppable. But humans are becoming increasingly aware in the concept of intelligent rescue operations in such calamities so that precious life and material can be saved though calamities cannot be stopped. Still there are lots of disasters that occur all of a sudden and Earthquake is one such thing. Earthquakes produce a devastating effect and they see no difference between human and material. Hence a lot of times humans are buried among the debris and it become impossible to detect them. A timely rescue can only save the people who are buried and wounded. Detection by rescue workers becomes time consuming and due to the vast area that gets affected it becomes more difficult. So the project proposes an autonomous robotic vehicle that moves in the earthquake prone area and helps in identifying the alive people and rescue operations.

TIW007	

TITLE - FABRICATION OF WASTE SAPERATION USING SMART DUSTBIN

ABSTRACT-In recent times, garbage disposal has become a huge cause for concern in the world. A voluminous amount of waste that is generated is disposed by means which have an adverse effect on the environment. The common method of disposal of the waste is by unplanned and uncontrolled open dumping at the landfill sites. This method is injurious to human health, plant and animal life .This harmful method of waste disposal can generate liquid leachate which contaminate surface and ground waters can harbor disease vectors which spread harmful diseases and can degrade aesthetic value of the natural environment and it is an unavailing use of land resources. In India, rag pickers play an important role in the recycling of urban solid waste. Rag pickers and conservancy staff have higher morbidity due to infections of skin, respiratory, gastrointestinal tract and multisystem allergic disorders, in addition to a high prevalence of bites of rodents, dogs and other vermin. Dependency on the rag-pickers can be diminished if segregation takes place at the source of municipal waste generation. The economic value of the waste generated is not realized unless it is recycled completely. Several advancements in technology has also allowed the refuse to be processed into useful entities such as Waste to Energy, where the waste can be used to generate synthetic gas (syngas) made up of carbon monoxide and hydrogen. When the waste is segregated into basic streams such as wet, dry and metallic, the

waste has a higher potential of recovery, and consequently, recycled and reused. The wet waste fraction is often converted either into compost or methane-gas or both. Compost can replace demand for chemical fertilizers, and biogas can be used as a source of energy. The metallic waste could be reused or recycled.   Even   though there are large scale industrial waste segregators present, it is always much better to segregate the waste at the source itself. The benefits of doing so are that a higher quality of the material is retained for recycling which means that more value could be recovered from the waste. The occupational hazard for waste workers is reduced. Also, the segregated waste could be directly sent to the recycling and processing plant instead of sending it to the segregation plant then to the recycling plant. Currently there is no system of segregation of dry, wet and metallic wastes at a household level. J.S. Bajaj has recommended that a least cost, most appropriate technological option for safe management should be developed. The purpose of this project is the realization of a compact, low cost and user friendly segregation system for urban households to streamline the waste management process. We are implementing a smart dustbin which is a cheap, easy to use solution for a segregation system at households, so that it can be sent directly for processing. It is designed to sort the refuse into metallic waste, wet waste and dry waste. The mixed waste is sorted based on the following methods at the industrial level. Larger items are removed by manual sorting. Then the refuse is sorted based on its size by using large rotating drums which is perforated with holes of a certain size. Materials smaller than the diameter of the holes will be able to drop through, but larger particles will remain in the drum. For metallic objects electromagnets or eddy current based separators can be used. Near infrared scanners are used to differentiate between various types of plastics based on the ability of the material to reflect light. X-rays can also be used to segregate materials based on their density

TIW008	**TITLE** - CHILD RESCUE SYSTEM AGAINST OPEN BORE-WELLS AT AGRICULTURAL FIELDS IN INDIA **ABSTRACT-** This paper presents a proactive approach to prevent child fatalities at the umpteen open uncapped bore-wells in India, which is based on communications using Infra-Red signals. When the IR signal, placed two inches diametrically under the ground surface of bore-well, breaks due to any obstructing object, a buzzer starts sounding as an alert and at the same time, a stake that is kept a few feet lower in the bore-well closes the bore in order to prevent the object from falling deeper into the well. The solution presented in this paper is a simple and yet easily scalable and highly cost-effective solution utilizing the proven technology of Infra-red Signaling.
TIW009	**TITLE** - VOICE ENABLED WHEEL CHAIR **ABSTRACT-** This Voice recognition wheel chair can be used for physically challenged

persons. This wheel chair uses a voice recognition module HM 2007 and match with the data stored in the microcontroller .The microcontroller with the help of the motor driver circuit will drive the respective circuit and perform the operation.

TIW010	
	TITLE - Fire Fighting Robot **ABSTRACT**- Now a days, fire accidents are very common and sometimes it becomes very difficult for a fireman to save someone's life. It is not possible to appoint a person to continuously observe for accidental fire where robot can do that. Therefore in such cases firefighting robot comes in picture. Robot will detect fire remotely. These robots are mostly useful in industries where probability of accidental fire is more. The proposed vehicle is able to detect presence of fire and extinguishing it automatically by using gas sensor and temperature sensor. It contains gear motors and motor driver to control the movement of robot. Relay circuit is used to control the pump and when it will detect fire then it will communicate with microcontroller (Arduino UNO R3) through Bluetooth module. The proposed robot has a water jet spray which is capable of sprinkling water. The sprinkler can be move towards the required direction .At the time of moving towards the source of fire it may happen that it will come across some obstacles, then it has obstacle avoiding capability. It will provide GUI for arduino operation using android. It detects obstacles using ultrasonic sensors up to range of 80 m. Communication between the mobile phone and robot will take place through Bluetooth, which will have GUI to control the movement of robot. When mobile gets connected to Bluetooth firstly it will set module name, baud rate. It is feasible to implement Bluetooth communication between smartphones and microcontroller. Android controlled robot can be used easily in everyday life such as in homes, market , companies etc. The development of apps for Android in Android SDK is easy and free of cost.
TIW011	
	TITLE - Fire Fighting Robot **ABSTRACT**- During summers, most people are too lazy to water the potted plants on their rooftop gardens every day. Explained in this section is a simple and exciting automatic plant watering system that you can build yourself in just a few hours. It is an Raspberry and raspberry pi based automatic plant watering system that uses a IR Sensor
TIW012	
	TITLE - Rope Climbing Robot **ABSTRACT**- This project is to develop a rope climbing robot that has the ability to climb a rope by itself or manually. This robot is built with hardware and software interfaces. The objective here is to produce an efficient, low powered and cost effective self-

	climbing robot that is able to reach the top of the rope in the least amount of time. The robot is using Arduino microcontroller as the brain. Besides that, the servomotors are used to build the movement and gripper of the robot. Generally, the robot control algorithm is designed so that the robot is able to move both horizontal and vertical direction. The robot can work in automatic mode or manual through RF signals from an RF transmitter. Furthermore, the robot can be attached with external circuits to serve various tasks such as by fixing a small video camera to offer "visual access" in places where access by human presence is difficult and dangerous.
TIW013	**TITLE** - BALL TRACKINGROBOT **ABSTRACT**- The aim of this project is to detect the ball and then track it based on the color .This is a real time visual based project, Images are continuously captured with the help of Pi camera which is located on Robot chassis and is connected to the raspberry pi using RMC connector. It will detect the object of specific color or shape and then robot tracks that object by moving left or right and forward or backward according to the object movement. It maintains the constant distance between the detected object and robot by using ultrasonic sensor. Image processing is used to capture and calculate the dimensions of frame or moving object image which is captured by Pi camera.
TIW014	**TITLE** - AUTO GUIDED VEHICAL WITH MATERIAL HANDLING AND OBSTACLE DETECTION **ABSTRACT**- In this project automated guided vehicle (AGV) is controlled using RFID. The vehicle moves from source to destination when the RFID tag is read. There are sensors present on the vehicle for obstacle avoidance and overload detection. The GSM module is used to get SMS to help the operator at the control station. An automated system is one in which a process is performed by a machine without the direct participation of a human worker. Automation is implemented using a program of instructions combined with a control system that executes the instructions. Robots are being used in a wide field of applications in industry. In material handling applications, the robots moves materials or parts from one place to another. An AGV is a material handling system that uses independently operated, self-propelled vehicles guided along defined pathways. AGV has firstly developed and conducted the research and an attempt to use at the Jumbo Truck Manufacturing in Thailand. AGV systems are used in a growing number and variety of applications. Next generation material handling should be highly automated and based on next generation technologies, and should very flexible and able to respond to the manufacturing system. This project illustrates the control of such AGVs using one of the most advantageous wireless technologies available in recent times that is the RFID (Radio Frequency Identification Technology). In radio frequency identification is attached. This tag contains up to 20 alpha numeric characters for

	identifying the product to which the tag is attached.
TIW015	**TITLE** - AUTO GUIDED VEHICAL WITH MATERIAL HANDLING AND OBSTACLE DETECTION **ABSTRACT**- Nowadays Technology keeps on upgrading. Home security is essential for occupant's convenience and protection. Security systems are being preferred over manual system. With the rapid increase in the number of users of internet over the past decade has made Internet a part and parcel of life, and IOTs is the latest and emerging internet technology. Home Appliances control of smart security system using IOTs uses computers or mobile devices to control basic home functions and features through internet from anywhere around the world. This security system differs from other system by allowing the user to operate the system from anywhere around the world through internet connection. With the help of Arduino microcontroller as an Embedded device, security system design was constructed with the help of many sensors like PIR sensor, Fire Sensor, Gas Sensors. Powered wheelchairs with the standard joystick interface are unable to control by many people. The android controlled wheelchair can provide easy access for physical disabled person who cannot control their movements with joystick. The powered wheelchair depends on the motor control and drive system.
TIW016	**TITLE** - AUTO GUIDED VEHICAL WITH MATERIAL HANDLING AND OBSTACLE DETECTION **ABSTRACT**- Exoskeleton Arm, a battery powered upper-body robotic arm which instantly increases human strength. Augmenting arm strength by forty pounds, Exoskeleton Arm helps rehabilitate people with back injuries, allowing them to rebuild muscle and relearn motor control. The exoskeleton technology also aids those lifting objects as part of their daily work, particularly in construction or delivery-driven positions. Labor, manual transporting is the main cause of injuries in the Bangladesh work force, and four out of five of these injuries will affect the lower back. Combined, upper body injuries cost the Bangladesh approximately $5 billion annually. Exoskeleton Arm is obviously an ingenious design, but the team's use of modern, rapid – and relatively inexpensive – manufacturing techniques makes the project even more compelling. We wanted Exoskeleton Arm to be affordable, as exoskeletons are rarely covered by health insurance. This informed our design decisions and the materials we used. Most structural components are machined from inexpensive aluminum.

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