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ROBOTICS TITLES AND ABSTRACTS 2020-21

PROJECT TITLE	**Design and Realization of the Accelerometer based Transportation System**
PROJECT ID	SHRB001
DOMAIN	ROBOTICS
ABSTRACT	An accident is a deviation from expected behavior of event that adversely affects the property, living body or persons and the environment. Security in vehicle to vehicle communication or travelling is primary concern for everyone. The work presented in this article documents the designing of an accident detection system. The accident detection system design informs the police control room or any other emergency calling system about the accident. An accelerometer sensor has been used to detect abrupt change in g-forces in the vehicle due to accident. When the range of g- forces comes under the accident severity, then the microcontroller activates the GSM modem to send a prestored SMS to a predefined phone number. Also a buzzer is switched on. The product design was tested in various conditions. The test result confirms the stability and reliability of the system.

PROJECT TITLE	**UNMANNED FIGHTER**
PROJECT ID	SHRB002
DOMAIN	ROBOTICS
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.

PROJECT TITLE	**ANDROID CONTROLLED AGRIBOT**
PROJECT ID	SHRB003
DOMAIN	ROBOTICS
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 water minimum man power and labour 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 & sensor interfaced with microcontroller.

PROJECT TITLE	**ARDUINO BASED VOICE CONTROLLED ROBOT**
PROJECT ID	SHRB004
DOMAIN	ROBOTICS
ABSTRACT	This project describes a simple and easy hardware for the implementation of face, object and speech detection and recognition. The system is programmed using python programming language for object and face recognition and for controlling the mechanism of the robot we write the program in Arduino. All these data is given to the robot such that when a person or object is identified the robot speaks the name of the person or the object and then it can be controlled by using voice commands.

PROJECT TITLE	**Advance Automatic Toll Collection & Vehicle Detection During Collision using RFID**

PROJECT ID	SHRB005
DOMAIN	ROBOTICS
ABSTRACT	In this project we address the problems faced at toll plaza & also introduce identification system for vehicles against which stolen and accident cases are registered using RFID. The owner has to create an account through mobile application & register his RFID tag. When vehicle passes through Toll Collection Unit (TCU) it is classified as passenger or goods carrying vehicle based on its Unique Identification Number (UIN). A goods vehicle is weighed at TCU & if it is overloaded then charged with extra tax. UIN is passed to Central Server Unit (CSU) where the balance gets deducted from account. Once the balance is deducted at CSU it will indicate TCS to open the barricade and vehicle is allowed to pass. If vehicle is detected to be stolen at CSU it will indicate TSC not to open the barricade. Also to overcome the problem of hit & run cases collision detection mechanism is implemented using piezoelectric sensor in vehicle to identify RFID of collided vehicles. These details can be used for further action.

PROJECT TITLE	**CAMOUFLAGE-MILITARY ROBOT**
PROJECT ID	SHRB006
DOMAIN	ROBOTICS
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 some additional parameters like blue-tooth module for real time data processed by the camera at the video screen and PIR sensor to trace the intruders.. Thus the proposed system using blue-tooth reduces errors at defense and keeps the nation secure from the foe.

PROJECT TITLE	**FIRE FIGHTING ROBOT**
PROJECT ID	SHRB007
DOMAIN	ROBOTICS
ABSTRACT	From the recent years, robotics has turned out to be a ingredient over which many people had shown their interest. Robotics has gained popularity due to the advancement of many technologies of computing and nanotechnologies. So, I have decided to design something that can make humans life easier and comfortable. Here my interest of review is to make a fully automated fire fighting robot which can help in dealing with many fire problems in households and small scale industries. Now I am not concentrating on making a fire fighting robot that can deal with fire on large scale because I want to proceed by step by step. The need of the hour is to make a device which can detect fire, even if it is small and take the necessary action to put it off. Many household items catch fire when someone is either sleeping or away and that lead to many hazardous conditions if the fire is not putted off in time. So, my work as an electronics and computer engineer is to design and build a system that can automatically detect and extinguish fire. I have used very basic concept here, easy to understand from the prospective of beginners or for the masters of this field.

PROJECT TITLE	**FLOOR CLEANING ROBOT**
PROJECT ID	SHRB008
DOMAIN	ROBOTICS
ABSTRACT	**Cleaning** is the process of removing unwanted substances, such as dirt, infectious agents, and other impurities, from an object or environment. Cleaning occurs in many different contexts, and uses many different methods. Several occupations are devoted to cleaning .**Floor cleaning** is a major occupation throughout the world. The main job of

	most cleaners is to clean floors.

PROJECT TITLE	**Gesture Controlled Wireless Agricultural Weeding Robot**
PROJECT ID	SHRB009
DOMAIN	ROBOTICS
ABSTRACT	Automated processes in the field of agriculture have become more and more reliable and efficient. There are many difficulties faced when manpower is used. It is time-consuming and becomes tedious. Robotic systems integrated with various control methods can be very useful in doing repetitive work, such as seed sowing process where the same movement is continuous. Previous weed removal robots included optical image sensing which makes the system more costly. Our robot is cost-effective which eliminates optical sensors. In this project, we have developed a Trainable automatic robot which helps in removing unwanted weed on agricultural fields using gesture to control a three-axis robotic arm to do the necessary work. The arm is placed on a rover which is controlled Wirelessly using Bluetooth. The arm is taught to do the repetitive motion with a gesture using a hand glove to do the necessary work. The setup of the rover with attached the robotic arm is tested and evaluation under normal environmental conditions.

PROJECT TITLE	**HAPTIC ROBOTIC ARM**
PROJECT ID	SHRB010
DOMAIN	ROBOTICS
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.

PROJECT TITLE	**IoT BASED SHOOT AT SIGHT MISSILE**
PROJECT ID	SHRB011
DOMAIN	ROBOTICS
ABSTRACT	This innovative system is made for operations which involve high risk for humans to enter into the danger zones, especially for some criminal case, and may prove very beneficial in military areas not only for spying but also for shooting purposes. Human surveillance is achieved by deploying soldiers near sensitive areas to constantly monitor for changes. But humans do have their limitations and deployment in inaccessible places is not always possible. There are also added risks of losing personnel in the event of getting caught by the enemy. With advances in technology over the years however it is possible to remotely monitor areas of importance by using ROBOT in place of humans, thus saving their lives. Also this project provides a key way to take the necessary actions such as shooting or not the desired objects along with spying the areas.

PROJECT TITLE	**INTELLIGENT TRAIN ENGINE**
PROJECT ID	SHRB012

DOMAIN	ROBOTICS
ABSTRACT	Whenever any engine observer a red signal on its track it will start decreasing its speed gradually and stops automatically at some distance from the signal pole. After then when it gets green signal the driver can maintain start the train and go on. In the mean time when train has not stopped yet and a red signal becomes green then it crosses the signal pole with low speed and then driver can slowly increase the speed. So now before the driver observes the red signal the engine itself observes it and automatically starts decreasing speed and then stops. The driver can feel relax in driving because he doesn't have to take care about red signals. Even if driver forgets to take any action on red signal then also we can avoid accidents by the implementation of this idea.

PROJECT TITLE	**IOT BASED SWARM ROBOT**
PROJECT ID	SHRB013
DOMAIN	ROBOTICS
ABSTRACT	Swarm robotics is a relatively new research area inspired from biological systems such as ant or bee colonies. It composes a system consisting of many small robots with simple control mechanisms capable of achieving complex collective behaviors on the swarm level such as aggregation, pattern formation and collective transportation to name a few. The main motto of this paper is to incorporate the swarm technology in consumer electronics where these are used in the operations like cleaning, pick and place, transportation of the household items from one location to another location in the place we reside. While a single robot can perform the home tasks, it might not be able to perform the tasks quickly. Time will be lost in finishing one task and then moving to another. So, it is evident that more than one robot must be used here. When more than one robot is used, controlling the robots becomes an important issue especially when the target locations and the robots are large in number. So, for easing the control of more than one robot, traits of Swarm behavior are replicated and implemented. Hence, a swarm behavior replicating group consisting of two robots are designed and fabricated that demonstrate how multiple-tasks can be handled effectively by a group of robots that perform individual actions while communicating and acting symbiotically. In the present paper, when

	target co-ordinates are passed to one robot, while retaining one target location, it passes another location to the other robot. Both start moving towards their target locations, but continue communicating with each other. In event of failure of one of the robots, the other robot takes notice of the failure. It continues to its location, does its work at that location, and then gives a backup at the other target location by performing the task of the robot that failed.

PROJECT TITLE	**IOT BASED WHEEL CHAIR AND HOME AUTOMATION**
PROJECT ID	SHRB014
DOMAIN	ROBOTICS
ABSTRACT	With the advancement of Automation technology, life is getting simpler and easier in all aspects. In today's world Automatic 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 IoT is the latest and emerging internet technology. Internet of things is a growing network of everyday object-from industrial machine to consumer goods that can share information and complete tasks while you are busy with other activities. Wireless Home Automation system(WHAS) using IoT is a system that uses computers or mobile devices to control basic home functions and features automatically through internet from anywhere around the world, an automated home is sometimes called a smart home. It is meant to save the electric power and human energy. The home automation system differs from other system by allowing the user to operate the system from anywhere around the world through internet connection. In this project we can also control the wheel chair using IOT for handicapped people, who face difficulty in moving around. IOT comes as a rescue for handicapped people where people sitting in different place of the world can monitor the physically disabled people and can find suitable methods for saving such people from accidents.

PROJECT TITLE	**Mind Controlled Wheelchair**
PROJECT ID	SHRB015

DOMAIN	ROBOTICS
ABSTRACT	A **wheelchair**, we can imagine that a chair it can be move with the help of wheels, it can be used for the person who have difficulty of walking or Impossible due to disability , injury, or illness . We can see that there is wide variety of wheelchairs used for the specific needs. Now a day commonly using powered wheelchairs, where propulsion is provided by The electric motors connected by the batteries. For a manually propelled wheelchair, where the movement of wheelchair is provided by the occupant pushing the wheelchair by handle, or by an attendant pushing from the rear, or by the wheelchair user.

PROJECT TITLE	**PICK AND PLACE ROBOT**
PROJECT ID	SHRB016
DOMAIN	ROBOTICS
ABSTRACT	Mankind has always strived to give life like qualities to its artifacts in an attempt to find substitutes for himself to carry out his orders and also to work in a hostile environment. The popular concept of a robot is of a machine that looks and works like a human being. The industry is moving from current state of automation to Robotization, to increase productivity and to deliver uniform quality. The industrial robots of today may not look the least bit like a human being although all the research is directed to provide more and more anthropomorphic and humanlike features and super-human capabilities in these. One type of robot commonly used in industry is a robotic manipulator or simply a robotic arm. It is an open or closed kinematic chain of rigid links interconnected by movable joints. In some configurations, links can be considered to correspond to human anatomy as waist, upper arm and forearm with joint at shoulder and elbow. At end of arm a wrist joint connects an end effector which may be a tool and its fixture or a gripper or any other device to work. Here how a pick and place robot can be designed for a workstation where loading and packing of lead batteries is been presented. All the various problems and obstructions for the loading process has been deeply analyzed and been taken into consideration while designing the pick and place robot.

PROJECT TITLE	**Hand Gesture Glove Controller**

PROJECT ID	SHRB017
DOMAIN	ROBOTICS
ABSTRACT	Drones are technically unmanned aircrafts or we can say simply a flying robot. The drones can be controlled by remote or can fly autonomously with the help of software which are programmed using techniques of embedded systems in conjunction with the onboard sensors and Global Positioning System (GPS). Flying these UAS and controlling RCs require a certain amount of skills which are developed over time. Consider the controller itself. We humans need a certain amount of training time before mastering control over any instrument. The main motive behind this project is to eliminate that instrument and replace it with a Master Controller which we are born with, whose control we have mastered from the day we were born, the HAND.

PROJECT TITLE	**AUTONOMOUS MOBILE RESCUE ROBOT IN DISASTER ZONES**
PROJECT ID	SHRB018
DOMAIN	ROBOTICS
ABSTRACT	Robotics has become a rapidly growing science that will enter the life of all classes of people in a few years. That is why we have tried to work in this field. The project that we are going to describe here is a robotic rescue team that uses its designed systems and utilized detection methods to help people and help rescuers to accurately detect victims when natural disasters such as floods and earthquakes occur. However, in addition to the functions listed, this robotic team can help in the identification of historic centres, help to protect the environment, be useful in mapping, and help the traffic police. The technologies used in this project can be implemented in various industrial fields, specially the virtual reality technology for communicating with the environment and better control that greatly expand the functionality of such robots. In this rescue team, a ground rescue robot functions as the main commander, an aerial rescue robot is used for more accurate identification and air support, and an automatic control ground robot is used for speeding up the operations. The three robots each have their own unique function and are linked together through a ground control centre.

PROJECT TITLE	**Autonomous Self driving Car Using Raspberry Pi**

PROJECT ID	SHRB019
DOMAIN	ROBOTICS
ABSTRACT	In the modern era, the vehicles are focused to be automated to give human driver relaxed driving. In the field of automobile various aspects has been considered which makes vehicle automated. In this paper, considering the different features and the cost, on a small scale a three-wheel vehicular robotic prototype has been designed that will follow the lane and avoid obstacles. Autonomous cars are a developing technology which may prove to be the next big evolution in personal transportation. This report begins by describing the landscape and key players in the self-driving car market. Current capabilities, as well as limitation and opportunities of key enabling technologies, are reviewed, along with a discussion on the impact of such advances on society and the environment. Most impact, including reduced traffic and parking congestion, independent mobility for poor people, increased safety, and energy conservation and pollution reductions will only be significant when autonomous vehicles become common and affordable to common people. Raspberry Pi is the central processor of our Autonomous car. Various images are captured by the camera module, on this images various Image processing techniques are used to achieve Artificial Intelligence.

PROJECT TITLE	**SOLAR POWERED ELECTRIC VEHICLE**
PROJECT ID	SHRB020
DOMAIN	ROBOTICS
ABSTRACT	The idea of this project is to design a solar car that aims to tackle the problems related to pollution and shortage of fuel. A Smart vehicle is the one that takes all our burdens on maintenance of the vehicle while ensuring safety and comfort for the driver and the passengers. Various parameters have to be taken into account while designing such a vehicle. In our design we have divided the whole system into two major divisions namely, • Vehicle monitoring system • Safety system Vehicle monitoring system includes various sensors that sense the various vital parameters such as Engine temperature, Fuel level and as we have developed it for a vehicle battery chamber temperature is also included. In addition to this accelerometers and speed sensors sense abnormal vibrations in vulnerable parts and over speeding. These data after being sensed is stored in the cloud. This enables monitoring of vehicle's performance and drivers actions remotely. Safety system includes sensing speed of vehicle approaching to perform

	safe cuts and lane change over. This also includes sensing objects in the proximity of the vehicle which helps in parking and driving in heavy traffic. An Emergency Shutdown System is designed to stop the vehicle at the flick of a switch when it is out of control.

PROJECT TITLE	**SPY ROBOT WITH BOMB DETECTION AND IMAGE MONITORING**
PROJECT ID	SHRB021
DOMAIN	ROBOTICS
ABSTRACT	This project controlled the robot system in a new economical solution and as well as it is used for different sophisticated robot application. The control system consists of Touch screen and Zigbee modules, a microcontroller that collects and controls the robot. Now Spying area in military ground where enemy stay can be took before taking any action. The Mini Spy Robot is small robot with a camera attached to it. The body of the robot consists of two wheels attached to geared motors. The motors will be run by the relays which will be then controlled through Touch screen via "ZIGBEE" device. Just by using a Zigbee enabled Touch screen.

PROJECT TITLE	**DESIGN AND IMPLEMENTATIONS OF STAIRCASE CLIMBING ROBOT FOR RESCUE APPLICATIONS**
PROJECT ID	SHRB022
DOMAIN	ROBOTICS
ABSTRACT	In today's life, technology concerned with robots plays an important role in many fields because they are used to operate in hazardous and urban environments, for security, in traffic system, rescue mission as well as military operations, Some of the robots are designed to operate only on natural terrains, but it can also use for rough terrains and artificial environments including stairways. This article represents the mechanism of how will robot climb the stairs carrying load. Its mechanical design is suitable with front wheel and back wheel driven by DC motor for climbing stairs .Although many robots had been introduced earlier have some problems like need of special device or software to control the

	robot etc. This article suggests an advance method for robotics control using the mechanical links. Until recent years, the stair climbing robots are designed with vast hardware and robots are equipped with chain roller to climb stairs or to move on a flat surface. The mechanical design of the this robot contains the fixed and flexible links of wheel legs instead of chain roller moves relative to each other to generate high friction with stairs. Its mechanical design is suitable with back wheel to drive the robot over rubble, and wheels in the front driven by dcmotor for climbing stairs. The operator can monitor the robot operation by using video that are captured through a camera on the surface of the robot.

PROJECT TITLE	**KROTO FINDER**
PROJECT ID	SHRB023
DOMAIN	ROBOTICS
ABSTRACT	Robotics is one of the fastest growing engineering fields of today. Robots are designed to remove the human factor from labor intensive or dangerous work and also to act in inaccessible environment. Robot capable of moving inside pipes and detecting cracks. Kroto is the Greek word meaning to crack. Inside the pipe, there is very heavy pressure, high temperature and toxic gases. So a robot has been implemented that has a wireless camera, sensors which is used to detect the crack and conditions inside the pipe.

PROJECT TITLE	**TRUCK**
PROJECT ID	SHRB024
DOMAIN	ROBOTICS
ABSTRACT	The main aim of this project is to make the system on the vehicle by which it will stop the overloading on vehicles automatically so that

	overloaded vehicle damaging the roads is reduced or avoided, and accidents avoided. Trucks exceeding the legal mass limits increase the risk of traffic accidents and damage to the infrastructure. They also result in unfair competition between transport modes and companies. It is therefore important to ensure truck compliance to weight regulation. New technologies are being developed for more efficient overload screening and enforcement. Weigh-in-Motion is the new technologies which allow trucks to be weighed in the traffic flow, without any disruption to operations. Much progress has been made recently to improve and implement intelligent overloading detection system which can contribute to safer and more efficient operation of trucks.

PROJECT TITLE	**UNMANNED VEHICLE TO DETECT ALIVE HUMAN DURING CALAMITY**
PROJECT ID	SHRB025
DOMAIN	ROBOTICS
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.

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