A D Patel Institute of Technology

Automobile Department

Project Details

A.Y. 19/20

Sr. No.	Project title	Student Name	Guide Name	Description
1	Design and Development of Fire Extinguisher Robot	Patel Darpan Patel Ankitkumar Prajapati Nikunj Sheth Dhruvil	Nikunj S Yagnik	Nowadays, fire hazards are very common and sometimes it becomes very difficult to neutralise them. Due to these reasons firefighting becomes a very tough job and can prove fatal for the firemen. Therefore, in such cases a fire extinguisher robot comes into the picture. They can become the first line of defence and help in reducing the effects of fire so that it can become safe enough for firemen. The proposed robot can be remotely operated via android phone. It contains DC motors and motor driver to control the movement of the robot. Relay circuit is utilised to control the water pump by communicating with an Arduino UNO microcontroller through Bluetooth module. The robot has a water jet spray capable of sprinkling water at the fire source. Communication between the android phone and robot will take place through Bluetooth. When the mobile gets connected to Bluetooth, it will firstly set module name, baud rate. It is feasible to implement Bluetooth communication between smartphones and microcontroller. Android controlled robots can be utilised easily in everyday lives such as in homes, market, industries etc.
2	E-cycle Garbage collector	Patel Deepkumar Patel Darshan Patel Jeetkumar Rupareliya Utpal J.	Yagnesh Ghambhava	Use of fossil fuel in power generation has its adverse environment impact. And due to growing population there is a scarcity of fossil fuels in today's world. To cope up with this problem this project suggests the Design of D.C. operated vacuum garbage collector, which is capable of producing a suck the dry garbage. And more efficient cleaning and required less effort. To meet the goal, first, the analysis about local environment and garbage is carried out. Second, it must have enough high efficiency and not to reduce suction power due to clogging. This garbage collector is leading to better approach in cleaning. As this garbage collector is eco-friendly, to use a cleaner source of energy for the better of mankind.
3	Test Protocol Development For 2W Vehicle Dynamics Objective Measurements	Joshi Hardik	Dr. Ajit James	The Project aims the development of Test Procedure for quantifying braking and handling of two-wheelers. Penetration of ABS in two wheeler segment needs new methods of validation for tyre contribution to vehicle braking system. Existing test methods needs to be revised as per current regulations and CEAT's requirements. For now, the procedure that we follow includes the wheel locking at required speed but according to the regulations and the accuracy requirements of the results we need to get maximum deceleration without wheels getting locked. Handling needs to be objectified as unlike four wheelers, pure open loop test cannot be done on two-wheeler due to dependency of 'Vehicle dynamics' on the Rider of two-wheeler.
4	Design and analysis of intake manifold along with	Tailor Miteshkumar	Dr. R Bala	In this study based project we finding a solution to identify the blockage of an air filter element of internal combustion engine in motor vehicles.

	detection of blockage air filter in vehicles.	Solanki Pratik Sandeep Dubey		
5	Design and Development of LMD Robot	Desai Niraj Rana Krishna	Nikunj S Yagnik	In this project we can design & develop an LMD Robot which operate with wheel and leg mechanism. This project is designed to create a safe, reliable, and inexpensive method of detection and disposal and similar class landmines for civilian application with minimal training. This project uses an Unmanned Ground Vehicle (UGV) to search for, detect, and mark landmines – taking humans out of the most dangerous aspect of the demining.

A.Y. 18/19

Sr. No.	Project title	Student Name	Guide Name	Description
1	Design And Development Of Electric Mini Tractor	Padariya Chirag J. Zenith B. Khoyani Thumar Dipen V	Dr. Ajit James Tom	Design and development of affordable mini tractor, by reducing costs in the conventional designs in the market, and also considering the manufacturing aspects for the same.
2	Remote Controlled Pesticide Sprayer	Diyora Ridham Limbasiya Naitik J. Manusuria Shiv Patel Anuj Umesh	Nikunj Yagnik	In India farming is mostly done with the help of traditional ways. However, there has been groundbreaking developments in the agricultural sector which has helped a great deal in progress of Indian agriculture sector. One of the technology used in this sector is pesticide sprayer that operates on manually operated pump mounted on a backpack. This results in over exhaustion while operating the manual pumps. To overcome this difficulty, our team has come up with an idea of fabricating a remote control mover on which pesticide sprayer is mounted. This will consume less time and prevents wastage of pesticide along with

				minimum requirement of manpower.
3	Self-Actuating Braking System With Pneumatic Bumper While Accident	Dobariya Hardik K. Hihoriya Mohit R. Sheta Jemish T. Jenish D Vora	Yagnesh Ganmbhava	This Project is about the Safety of Car and occupants. In this system uses the Solenoid valve,Disc brake, Controller, sensor(Distance Measurement),Battery, RDNO Circuit,Bumper. If obstacle or Any Car will come in front of the Vehicle Then the Bumper will move towards the Front side and also apply Brake to the wheels. When the vehicle speed is more than 40 kmph then Bumper and Breaking system both working but The speed is not more than 40 kmph then only Bumper Can work.
4	Design, Modelling and Development of Hydraulics Sky lifter for 2 Wheeler	Ankit Tiwari Divy Patel Dharmik Patel Pavan Mistry	Samarth Shelat	There was major issue regarding the lifting of bikes. There were jacks available but they can lift the bike in only one position. This causes fatigue to the workers as well as difficulty in reaching the parts of the bike during servicing. So for this problem we can up with the idea that we should construct a lifting machine that will be able to lift the bike in different positions so that the worker can easily to perform the servicing procedure simply. In addition to this, the lifting machine will be able to lift the bike in three different positions. They are ‘both wheel high’, ‘front wheel high’ and ‘rear wheel high’. So

				in this way the worker will be able to work more easily and efficiently. This hydraulic Sky Lifter will be able to lift bikes using minimal effort.
5	Hydraulic Mini Fork Lifter	Karan Patel Maulik Padhariya Yash Sanghadia Kush Thakker	Samarth Shelat	Every workshop or small scale companies does not have overhead crane and cranes available in market can carry more load but are not portable and heavy & costly so our crane can be used to carry load up-to 150-200kg and it is easily portable.

A.Y. 17/18

Sr. No.	Project title	Student Name	Guide Name	Description
1	Detecting Overloading in GV and Engine immobilizing	Akash K Akbari Dikshit S Patel Mayank P Shrimali Tapan P Upadhyay	Nikunj Yagnik	With the gradual development of economy, the scale of transportation industry continues to expand. The problem of overload in the vehicle transport has emerged. Therefore, how simple and conveniently to know the vehicle load and how to effectively limit overload has become a key issue. Vehicle load control system integration device can detect conveniently vehicle load to prevent overloading of vehicle and improve vehicle safety and it can effectively reduce heavy work of the vehicle load testing station and improve work efficiency in transport sector.
2	Hybrid Cross Two Wheeler	Karan Gagnani Jugal Mirchandani Nishant Patel Honey Patel Pratiksha Chauhan	Kuldip Patel	Keeping in mind the drawbacks of the electric and conventional IC engine bike,this project was brought up to find a solution between them. Hybrid two

				wheeler will contain electric motor which will help in reducing the pollution produced by the burning of fuel in IC engine and increase efficiency which will lead us to less fuel wastage.
3	Automatic Headlight beam switching according to Vehicle Speed	Bhimani Pradip P Patel Jaimin P Pathan Izlal M Yusuf Vakhariya	Nikunj Yagnik	Headlights are used in automobiles for illumination of road and to alert the driver of car on the opposite end. But it also creates glaring and over illumination problems. Dimming of headlights whenever necessary is a effective solution to this problem. Automatic dimmers of headlights is already in the market and this paper reflects the further advancements of this concept. Lighting system is not the major source of current drawer from the battery but if it is used extensively over a period of time significant amount of current. The headlights are operated under constant current source from the battery. This project addresses the solution to the problems stated above by controlling the brightness of headlights using vehicle speed. This can be done by varying the current flowing from battery to headlights. By controlling the brightness of the headlights using vehicle speed we can reduce the over illumination problems and expect savings in current flowing from battery to headlights.

4	Hydraulically Operated Bumper for Absorbing Shock in Accident Condition	Takshak M Gandhi Himanshu B Joshi Jainil Y Shah Hardik A Thakkar Mayur M Jadav	Dr. Sudhir Gupte	Automotive designs with economy, safety and aesthetics have been a great challenge to design engineers. Automobile bumper subsystem is the front and rear structure of the vehicle that has the purpose of energy absorption during low velocity impact. Bumpers are structural components installed to reduce physical damage to the front and rear ends of a light/ heavy motor vehicle from low-speed collisions. The bumper should support the mechanical components and the body. It must also withstand dynamic loads without undue deflection. This Project deals with the idea of Hydraulic shock absorber using bumper in the front overhang of the four wheeler, which reduces the loss and deformation of the vehicle during the accident. It includes Hydraulic fluids and shock absorber spring as an active component in the Impact reducing system.
5	Automatic Reverse Braking System	Chintan Dave Priyansh Makvan	Dr. SM Patel	This seminar introduces a control systems based on electronically controlled automotive braking system is called “Intelligent Reverse Braking System”. A Sensor Operated Pneumatic Brake consists of IR transmitter and Receiver circuit, Control Unit, Pneumatic breaking system. The

				IR sensor is used to detect the obstacle. There is any obstacle in the path, the IR sensor senses the obstacle and giving the control signal to the breaking system. The pneumatic breaking system is used to brake the system. So basically here the car brakes on its own by determining the distance from the object.

A.Y.16/17

Sr. No.	Project title	Student Name	Guide Name	Description
1	Tow Board	Rana Adil Jadav Pratik Shroff Anand Dadhania Jeel Poojan Raval	Mr. Mahesh Phogat	Project (tow board) is all about designing a system which carry or tow a motorcycle with its own power. It will tow the vehicle(motorcycle) while in case of Tyre or may be Wheel problem. This includes designing an auxiliary drive wheel and a steering wheel (Castor wheel) in this system. The system also consist of special assembled supports which will allow the motorcycle to lift and free rotation main drive wheel.Here the system (tow board) consist the concept of skateboard and a PTO (Power take off). Drive wheel or Axle will be driven by an PTO shaft from motorcycle.

				This PTO is specially design for this project "tow board". The combination of these two concepts helps to develop this project. System is so designed to be flexible to use, thus can easily be assembled or disassembled
2	Power regeneration using Exhaust gas	Prajapati Jayeshbhai Sisodia Nehal Shah Bhavesh	Mr. Kuldeep Patel	" The internal combustion engines are not able to convert chemical energy in to mechanical energy efficiently. Most of this energy is dissipated as heat in the exhaust and in coolant. Instead of directly improving efficiency of the engine, efforts are being made to improve the efficiency of the engine by help of waste heat recovery system. There is one technology were found to be useful for this purpose that is thermoelectric generators. These were silent, scalable, solid state and durable. A waste heat recovery system has the potential to convert some of the waste heat into electricity. "
3	Tilting vehicle	Harsh K. Acharya Kishan G. Kakdiya Yash Naria Ronak D. Vaghasiya	Dr. Nimit Patel	The use of tilting three wheeled vehicle instead of the conventional ATV Quad bike is more advisable. We have

				formulated a design which employs a tilting vehicle while keeping intact the stability of an ATV Quad bike. This will allow the vehicle to be tilted while negotiating a turn or uneven terrains. The degree of tilt will be dependent on the amount of turning applied. This mechanism would increase the maneuverability of the vehicle on uneven terrains as well as where frequent turning is required; for e.g. hilly slopes, farms, snow lands etc. The tadpole structure, i.e. two wheels in the front and one in the rear increases the handling capability as well as rollover stability of the vehicle.

A.Y.15/16

Sr. No.	Project title	Student Name	Guide Name	Description

1	To Design a fixture to reduce cycle time (IDP)- Elecon Industries, Anand	Joshi Deep Marfatiya Mo-sadman Modi Karan	Mr. Yagnesh Gambhava	The Project is carried out and implemented at Elecon gear division, Vitthal Udyog Nagar Anand, In machining processes such as facing, turning, tapering and boring are performed on single side of a batch of work piece and then on the other side. The aim of designing this fixture is to reduce cycle time by machining both the faces of work piece consecutively without changing its centre. This can be achieved by rotating work piece within machine itself.
2	Central Vaccum cleaning for automobile (UDP)	Mistry Amraram Purohit Rahulkumar Maheshwari Rushang	Mr. Mahesh Phogat	A Central Vacuum Cleaning System for an Automobile is used for providing the opportunity to vacuum an automobile anytime or anywhere. The system includes a vacuum generating unit, a remote vacuum port, and a vacuum cleaner hose. A remote vacuum line is located within the panels

				of an automobile and provides connection between a vacuum intake port of the vacuum generating unit and a vacuum hose attachment end of the remote vacuum port. The remote vacuum port is located strategically and conveniently within the passenger compartment of the automobile. The vacuum generating unit includes a vacuum motor and a debris collection unit. Power to the vacuum generating unit may be generated by the battery or engine of the automobile and may be controlled by a remote power switch, which is install in a convenient location such as a dash hoard, control/instrumentation panel, or console of the automobile. The debris collection unit is located in a convenient place such that a debris receptacle

				located within the debris collection unit is readily accessible and may be emptied when necessary. A convenient location of the debris collection unit is under the hood of the automobile. The vacuum cleaner hose may be of the extendable/retractable type and may be stored under a front seat or in a rear compartment of the automobile. A vacuum cleaner hose attachment tool may be attached to the vacuum cleaner hose. Attachment tools of those commonly used with vacuum cleaners may be used. The remote vacuum port includes a vacuum port anti clogging screen to prevent the intake of large objects into the remote vacuum line and a vacuum port sealing cover to cover the end of the remote vacuum port when not in use.

3	Redesign hydraulic jack mechanism used in tipper & auto-tractor trailer and economically sophisticate its manufacturing process.	Dudhat Nikul Paladiya Kishan Nakrani Meet Sengani Dipesh	Mr. Yagnesh Gambhava	In This Project the design has been implemented in such a way that the vehicles can be unloaded from the trailer in three axes without application of any impact force. The Direction of the mechanism can be control with the help of ball and socket joint which attached the ram of the hydraulic cylinder which lifting the trailer cabin in require side. By this research it is easy for the driver to unload the trailer and it reduces the time.