***AIM***

***To help Indian army to carry their precious cargo safely through the war zone and reduce loss of human life***

***PROJECT DISCRIPTION***

***The name of the project is ULV(unmanned land vehical). It is a self driven vehical and is able to perform various tasks.Such as it avoids obstacles give a warning to the obstacle and then waits for 10 seconds and if then also the obstacle does't moves then it shoots it using its special weapon.And if some living object tries to climb the ULV the it gives it a tight shock using its capacitor bank and to sense the obstacle it uses the ultrasonic sensor and the relay module controlls most of its functions like charging and discharging of the capacitors. plus it have a gyroscope which facillitates the vehical to balance itself and to take turns easily***

***it uses 2 micro controllers.***

***some capacitors and many more parts.***

***so now lets have a look on the components of this ULV***

***1. arduino nano***

***2. arduino uno***

***3. gyroscope***

***4. ultrasonic sensor***

***5. relay module***

***6. 2voltage boosters***

***7. led's and LDR***

***8. the special weapon ( empl) i.e electromagnetic projectile launcher .***

***9. electric grils***

***10. Li-ion battery***

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Principle involved

The ULV works on multiple principles when all the concepts work together the ULV is able to work

the first principle is of SONAR i.e SOund Navigation and Ranging which is the form of ultrasonic sensor in the ULV. the sensor transmitts the ultrasonic sound waves and then the come back to the reciver when they strike an obstacle and then the signals are been analysed by th micro controller and the action is take accordingly

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the next principle is of micro controlling which is in the form of arduino's in this ULV

the arduino's recieve the signal from the sensors and then they take the action for which the are programmed

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the next principle is electromagnetism

the ULV uses a electromagnetic coil which works on the capacitors and it is used to fire projectile on the obstacle if the obstacle does't moves

then the capacitors discharge their currnt in the coil it leads to the generation of the electromagnetic feild which pushes the projectile out of the coil at a very high speed (but the projectile should be of iron).

And the relay acts as an electromagnetic switch to turn on an off the circuit

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the next principle is of transformers

it is a static machine which stepsup or stepsdown the electricity. The transformers used in the ULV are able to work only on frequency current and the frequency current is generated with the help of a MOSFET

which turns the circuit on and off at a very high frequency and as a result the transformers step up the voltage (as the transformers are stepup transformers).

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the next principle is of gyroscope

the gyroscope helps to produce gyroscopic effect and it provides stability to the ULV

the torque generated by the disc of the gyroscope increases the angular momentum of the disc which make the disc stable and it is difficult to move the disc (because a force acts in the perpendicular direction of the plane of the disc)

and then this whole gyroscopic effect is applied to the whole body and helps to provide it stability.

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the next and the last principle is of LDR

the LDR stands for LIGHT DEPENDENT RESISTANCE

which helps to change the resistance of the circuit according to the intensity of the light

the resistance is inversely proportional to the intensity of the light .

***WORKING OF ULV***

***whe the ULV is moving it keeps on detecting the obstacles with the help of the ultrasonic sensor connected to arduino nano.***

***and if the obstacle comes within the range of the ULV i.e comes closer to the vehical then the ULV stops ad the LDR gives the signal to arduino uno to stop the vehical and wait for 10 seconds and gives a signal to the obstacle to move away the gyroscope of the ULV is always turned on so that the vehical is stable .***

***The voltage boosters work with the help of a li-ion battery.***

***and the relay module controlls the circuit of the capacitors and the voltage boosters and the capacitor of the coil is also discharged by the relay module only.***

***The arduino uno controlls the motor shield and the LDR***

***where as the arduino nano controlls the relay module , ultrasonic sensor, indication led's, alarm and the led to give a signal to the LDR.***

***UTILITY***

***1. The ULV can be used for transporting precious cargoes***

***2. can be used for safety purposes***

***3. it can be used by the military in the places where there are more chances of loss of human life***