2076

DISASTER RESCUE VEHICAL

Disaster Support Technology

It is Disaster Rescue all-terrain Vehicle for rescuing people for natural calamities.

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Title of Project:

A “Disaster Rescue Vehicle” or “All-Terrain Vehicle” on the theme Disaster Support Technology for Medical and Logistics Supply Solutions.

Introduction:

Disaster Rescue Vehicle is a type of an all-terrain vehicle which can go in any land structure, in any condition and in any place. During Disasters it not possible for Army to go to places which are flooded or wrecked. Therefor an all-terrain is a solution for it. It can be used to rescue a large number of people at once during disasters. It can be controlled by a very few number of army men’s as well as it’s convenient to use.

Background:

This is inspired from the vehicle called Crawler-Transporter which is used by NASA to move rockets from one place to another. This vehicle used 4 caterpillar track system to move in any land structure. This vehicle was very heavy and powerful. So an idea dropped into our mind to create something like this but in a new innovative way and for a different purpose and we thought that it can be used to go to difficult land structures and save the life of people. In context of Nepal, Every year different natural disaster keeps on occurring so his type of vehicle is very useful for the army men.

Scope:

It has an extensive use in the modern world days as a Disaster Rescue Vehicle and a Spy Vehicle too. When disasters occur it's very difficult for army to rush to the different place and rescue people which take the life of people. So an all-terrain rescue vehicle is required to rescue victims.

In addition it can also be used for a spy vehicle. It's very important for army to know where there enemies are. So, a small toy like vehicle is required to keep a Spy on them and defeat them.

Speciation:

The Disaster Rescue Vehicle is a System Compose of 4 Caterpillar Track (the idea based on the movement of tank, JCBs etc.) with each 2 high torque 12 V DC Geared Motor for power. It is controlled by a development board called Arduino Uno R3 ATmega328P which operates with a program installed in it. The Arduino is connected with a Motor Driver Shield L293D which drives the motor in the caterpillar track for the movement of vehicle. It has an Eachine TX03 NTSC Super Mini FPV Camera for better driving. It is controlled by a FS-i6 2.4G Radio Controller. To receive the signals from the FPV Camera there is a Skydroid 5.8GHZ 150CH UVC OTG FPV Receiver to display the video of in a PC or a Smartphone. These all are powered by a 12V Rechargeable Battery 8000mAh. The body of the vehicle is made up of Aluminum board, rods, pipes and sheet.

A. Arduino Uno R3 ATmega328P Development Board
B. Motor Driver Shield L293D
C. Electric Motor 12V DC Geared Motor High Torque Motor
D. Motor Coupling/Connector 10mm
E. FlySky FS-i6 2.4G 6CH Remote Control Transmitter
F. Eachine TX03 NTSC Super Mini FPV Camera VTX 600TVL
G. Skydroid 5.8GHZ 150CH UVC OTG FPV Receiver
H. Rechargeable Battery 12V 8000mAh
I. Aluminum Boards, Pipes and Rods
J. Screws, Nut Bolts
K. Bike Chain, Axle and Bearing

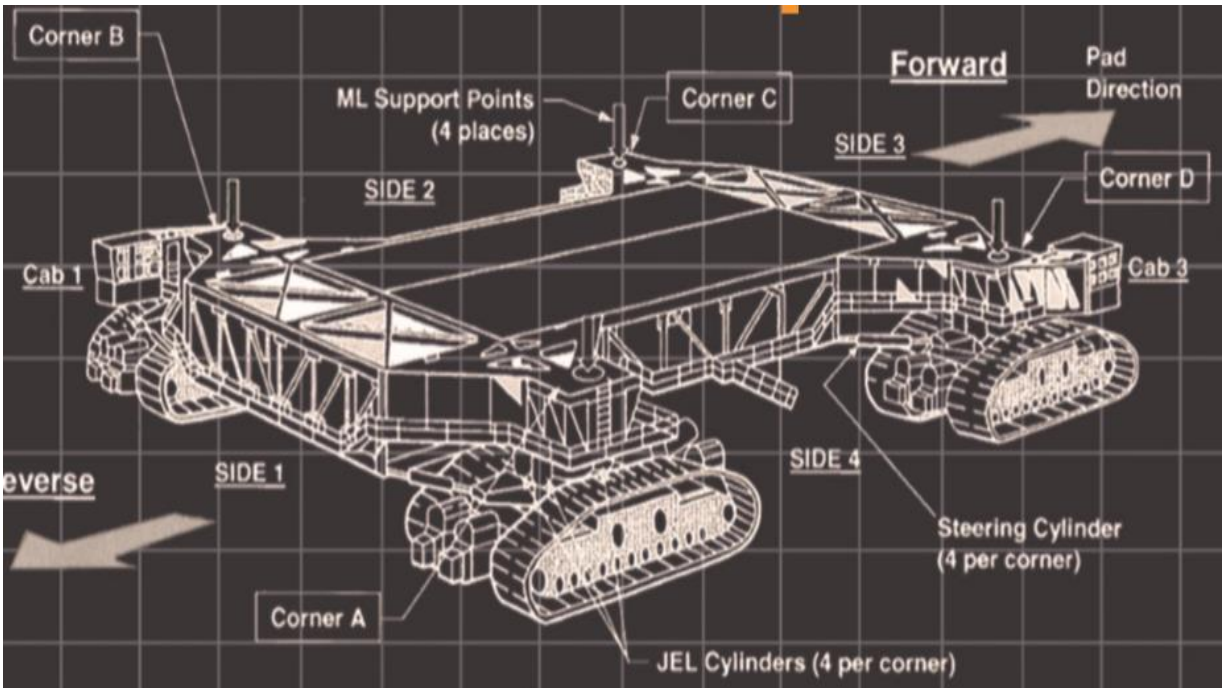
These are the list of the materials used in the projects.

Procedure:

Firstly we will start up with making of the four caterpillar track movement systems. To make that we need an aluminum board, that is cut up in the required shape and size. The axle, chain and metal are used to make a caterpillar track after that they are connected to the chase of the track. The motors are connected in the track with a motor connector. We need to make four like this. Then after the four tracks are connected with the main chase of the vehicle. A small board is fitted in the bottom with the help of screws to fit all the logical boards', receivers and other wiring stuff. Then the FPV camera is joined with a servo and connected to the FPV receiver and to the PC.

Structure of the Vehicle:

As we previously said it contains 4 caterpillar tracks as present in a single tank. To give more stability to it we have used four. We have kept a minimal distance between the ground and the main body of the vehicle to not let roll or skid. It covers a very large area to take a good grip on any kind of surface. It's all body parts are made up of aluminum which makes its body very light and strong.



This is a basic blueprint of the vehicle.

How to operate:

There is a six channel FlySky FS-i6 2.4G 6CH Remote Control Transmitter for the motors and the servo. There are eight motors and a single servo for the camera mount. They all are controlled by a Remote Control Transmitter. The video of FPV camera is displayed on the PC with the FPV receiver module.

Further Improvements:

It is a very well prepared idea through which a lot of different rescue or spy vehicles can be made. It can also be attached with attached with a Robotic arm to make it easy to move in difficult land structures and to move objects. As well as drones can also be fitted in the vehicle to search for victims and rescue them. It can also be used for Medical and Logistics Supply Solutions , All-terrain Vehicle & Mobility Solutions, Surveillance and Detection Systems, Signal Jammer (GSM, RF) etc.

Conclusion:

This project is a very innovative and has lots of use in the modern war fare as well as the disaster management process. We hope that this project will be useful to Nepali Army and others. We will give our best to complete the project. Looking forward for your positive respond.

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