TEAM ARMY

REMOTE CONTROLLED ROBOTIC VEHICLE

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Description of the Project

Problem Statement

OPEN INNOVATION
'MUNTRA' :MISSION UNMANNED TRACK
The concept comprises of a remote controlled robotic vehicle having the functionality of spying cum light powerful weapon. On the aggressive counterpart it can fire under unavoidable threats with no loss of lives on damage.

Relevance to the Theme

The vehicle will contribute to the defence sector by detecting bombs, mines, nature of soil and people thereby. Modern IR sensors will detect detect the presence of objects in vicinity.

Approach to the Solution

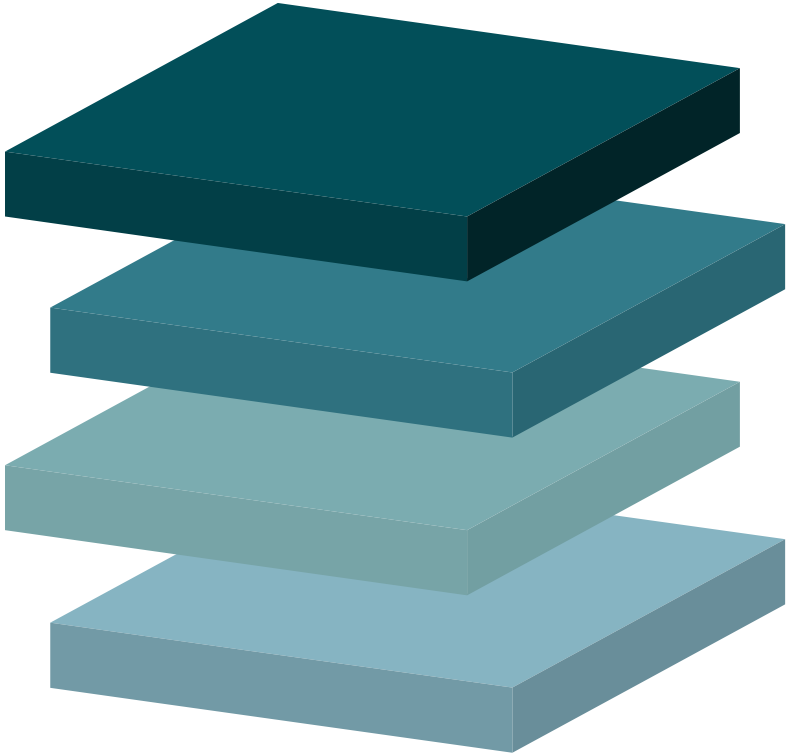
The solution to the problem statement can be achieved through usage of magnetic energy as a secondary source with battery. The softwares involved to present the idea are blender 3D, sketchup pro, ms powerpoint etc. The electronic components involved gives it a multi functional approach to tackle the combat.

Techstack Involved

The electronic components incorporated :
- Modern IR sensors
- High definition camera
- Thermal imager
- BFSR -SR Radar

Integrated Multi-Function Sight (CCD/TI)
- Laser Range Finder

Details of Technology Stack



INFRARED SENSORS

An infrared sensor is an electronic device, that emits in order to some aspects of the surroundings. These types of sensors measure only infrared radiation and measure heat of object and detect its motion.

THERMAL IMAGER

A thermographic camera/imager(thermal imaging camera or infrared image) is a device that creates an image using infrared radiation, similar to a common camera that forms an image using visible light.

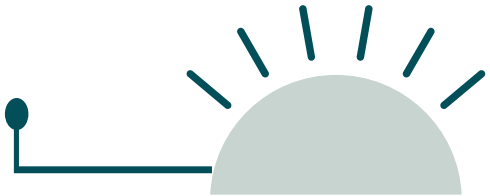
BFSR -SR RADAR

The BFSR is a fully coherent pulse doppler radar, operating with a 10% duty cycle, and a 5W peak power. The low peak power provides the radar a low probability of intercept making it difficult to detect by enemy sensors.

HIGH DEFINITION CAMERA

HD refers to cameras with a standardized resolution of 720p or 1080p. HD aspect ratio is 16:9 (compared to 5:4 or 4:3 in other surveillance cameras). It has a high quality compliance standard with frame rate 30/25.

Description of the Solution



2021

Step 1

CONCEPT IDEATION - SPYING CUM COMBAT ROBOTIC VEHICLE

Step 2

Division of the task among the team members w.r.t. their ability to prototype.

Step 3

Research work on electronic devices and the design/ functional operation of product.

Step 4

Social/ Business aspects explained with the product simulated on blender software.

Cost Management

1. Infrared Sensors = 200.
2. BFSR- SR Radar = 2500
3. Thermal sensors = 2,000
4. Tank Body with the Remote control system = 10,000 - 20,000
5. Other part as per required such as batteries, wires, nuts etc = 30,000
6. Gun price = 7,000 (per round)
7. HDR Cameras = 10,000 - 20,000
8. Backup price = 25,000

TOTAL RATE (Approx.) = 80,000 - 100,000

Novelty of the Solution

The ideation of the project has a dynamic approach for the defence sector. Two excellent features of investigation and defence under one vehicle. Obtaining Magnetic energy through solenoid gives it an upper hand over those running on fossil fuels. IR sensors makes it a functional land drone.

Growth Plan of the Product

MUNTRA : MISSION UNMANNED TRACK

10%	CONCEPT IDEOLOGY AND RESEARCH	The concept was drawn keeping in my mind the need for spying cum combat technology in our defence sector with an open innovation approach.
25%	INTRODUCING ELECTRONIC DEVICES AND SENSORS	This step was a result of technical advancements of the modern scenario comprising sensors , radars, thermal images etc for surveillance.
50%	SIMULATING THE VEHICLE ON SOFTWARE	The main challenge was to simulate our mindset to practical form/function thereby graphics/ simulating softwares like blender, SketchUp pro came to take the lead.
70%	PRESENTATION ON IT'S PRACTICAL APPROACH	From social applicability to business prospects the product takes the stand with our objective as contribution to our revered Indian army 🎖️🇮🇳

Business Aspects of the Hack

01 Market Impact

More economical, creates employment for mechanical and electronic engineers.

02 Target Consumers

Used by defense sector for investigation and research purposes.

03 Financial Sustainability

By lowering the expenses,raise money with grants and crowdfunding, applying for business financing,consolidating the debts.

04 Product > Project

There are pre-built equipments and sensors involved in a defence vehicle combining the combat and spying functions thereby can be used as an efficient product.

Social Impact

On this counterpart, this vehicle has an edge of being remote controlled so there will be no loss of lives of soldiers. The magnetic energy involved doesn't contribute to environment pollution. It will increase portability to inaccessible areas under adverse/combat situations.

Working Prototype

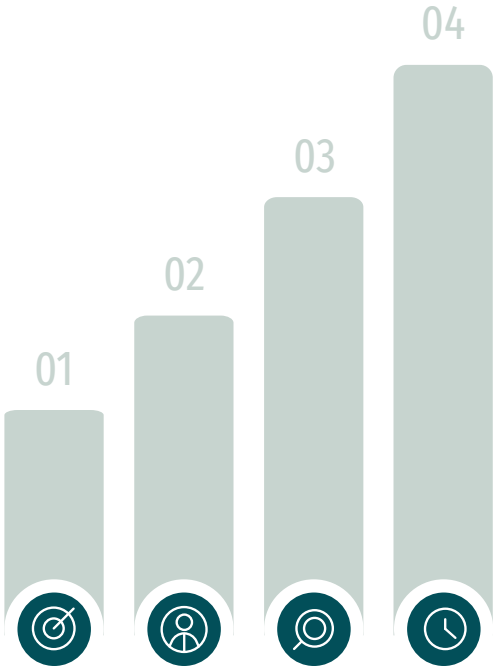
YOUTUBE LINK - https://youtu.be/ZyrnIm3MAaw

YOUTUBE LINK - https://youtu.be/8D233BOgnr0

WEB LINK - https://www.military.com/video/first-fully-modular-unmanned-ground-vehicle

Learning Curve

- What have you learnt by doing this project?



01 Growth 1

Team work of how to divide the technicalities between the group members and learn new softwares like blender, sketchup pro etc.

02 Growth 2

Brooding over the concept of renewable energy sources gave way to do research on the most sustainable and efficient source which is magnetic energy. Effort was also put on learning working of sensors and thermal imagers.

03 Growth 3

Became aware of the “Mission unmanned track” vehicle which plays its counterpart in surveillance and its operation in nuclear and contaminated zones. It has GPS waypoints which avoids obstacles in the vicinity.

04 Growth 4

Got an overview of the weapons involved in defence sector and the versatile use of drones for detecting bombs, mines and nature of soil thereby. This study assisted our thinking of how surveillance system works

About Team

01

ROLE - LEADER/CONCEPT IDEATION

02

ROLE - DESIGNER /PRESENTATION

03

ROLE - TECHNICAL HEAD

04

ROLE - RESEARCHER/ TECHNICAL SUPPORTER