

# Self-Stabilizing Traction Vehicle {SSTV} – Prototype <sub>by</sub>

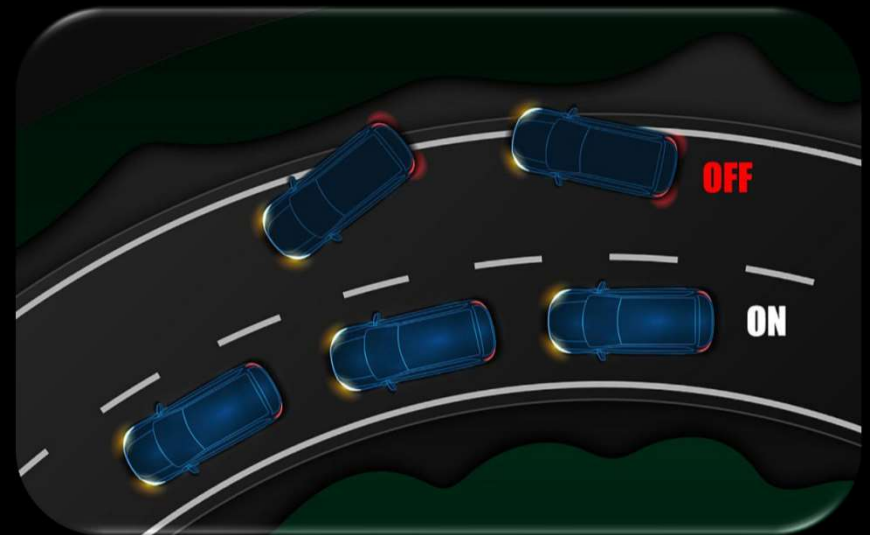
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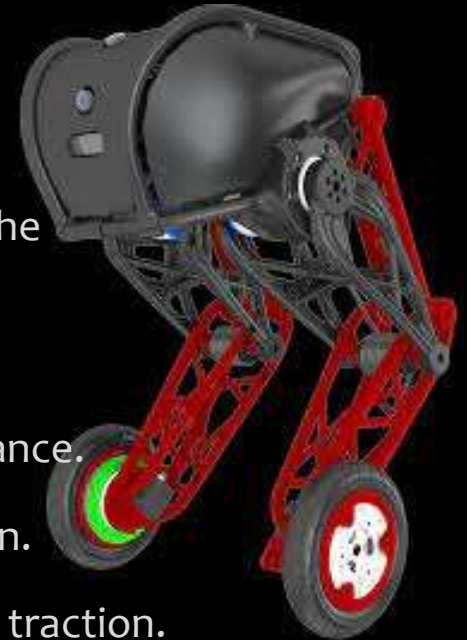
## Objective:

- The main objective of a self-stabilizing traction vehicle is to develop a system that maintains balance and traction while operating on different terrains. This is especially useful for vehicles navigating rough, uneven, or slippery surfaces, where both stability and traction control are critical.



## Work Principle:

1. Sensors detect slippage or instability , tilt angle and send data to the microcontroller.
2. The microcontroller calculates corrective action using a algorithm.
3. Motor speeds are adjusted to counteract the tilt and maintain balance.
4. The control system processes data and calculates corrective action.
5. Actuators adjust motor power, brakes, or differentials to maintain traction.
6. The system continuously updates based on terrain and driving conditions.



# EQUIPMENT REQUIRED FOR PROJECT {₹ - rupees}

1-Battery {500-1200mah} → 100 – 200

2-Hall Sensor{DRV5015} → 20 - 40

1- MPU 6050/IMUMPUPU

1-Bluetooth module → 250 – 350

1-5V switch regulator → 30 - 50

1-5V Active Buzzer → 10 – 30

1- MG995 Servo tower pro

ARDUINO's

1-MEGA + 1 NANO/UNO

OR

1-NANO + 2 UNO'S

OR

3UNO'S

2-Nidec 24H4040h160 motors

or

1-Nidec 24H + DCMotor + Motor Encoder  
+1-MG995 Servo + 1-Motor Driver

Couple of resistances  
and capacitances to  
complete circuit.

Arduino's

→ NANO > 150 – 300  
UNO > 250-350  
Mega 2560 > 1000

→ Motor encoder > 400-470  
Motor Driver > 90-100  
Nidec 24h > 1000