



EULERIAN BOTS

CURVE ALERT SYSTEM

SMART SAFETY FOR BLIND CURVES IN MOUNTAINOUS ROADS





Curve Alert System

Smart Safety for Blind Curves in Mountainous Roads

Overview

The Curve Alert System is an autonomous, solar-powered safety solution designed to prevent accidents on blind curves in hilly terrains. Developed with cutting-edge Lidar-camera fusion, real-time logic algorithms, and renewable energy integration, this system eliminates the need for human oversight or grid infrastructure, offering a reliable safety net in some of the most dangerous road environments.

Key Features

- ✓ **Autonomous Operation** – No manual intervention required
- ✓ **Solar-Powered & Off-Grid** – Ideal for remote and rugged terrains
- ✓ **Bidirectional Vehicle Detection** – Real-time, dual-end monitoring
- ✓ **Smart Visual & Auditory Alerts** – High-visibility lights and sirens
- ✓ **Environment Adaptive** – Performs in fog, rain, and low-light conditions
- ✓ **Fail-Safe Logic** – Red signal on both sides in case of simultaneous detection

How It Works

1. **Detection:** Lidar-camera modules detect vehicles approaching from either side.
2. **Decision Logic:** The system compares the time of detection (DT). The earlier detected vehicle is granted passage.
3. **Signalling:** Traffic lights and sirens alert drivers based on system decisions.
4. **Energy Management:** Solar panels power the system and charge internal batteries for 24/7 uptime.



System Components

- **Lidar-Camera Module:** 150m range, IR night vision, weatherproof
- **Solar Panel (100W):** High-efficiency monocrystalline, tilt-mounted
- **Battery Backup (40Ah):** 36–48 hours backup with smart BMS
- **Controller Board:** Real-time microcontroller with onboard logic
- **Siren System:** 95–110 dB warning system
- **LED Traffic Lights:** Visible up to 200m, energy-efficient

Use Case Scenarios

Scenario	Side A Signal	Side B Signal	Siren
No vehicles detected	Green	Green	Off
Vehicle on Side A only	Green	Blinking Amber	Side B Only
Vehicle on Side B only	Blinking Amber	Green	Side A Only
Both sides (conflict)	Red	Red	All On
Both sides (safe time diff.)	One side Green	Other Warned	Controlled

Applications

- Military roads in border regions (Ladakh, Sikkim, Arunachal)
- Tourism zones in mountain towns
- Wildlife and forest roads
- Emergency rescue and disaster corridors
- Smart infrastructure under PMGSY, MoRTH, and Gati Shakti schemes



Proven Reliability

-  TRL 7–8
-  Prototype tested with the Indian Army
-  Demonstrated in controlled terrain simulation
-  Sustainable and scalable infrastructure

Competitive Advantage

Feature	Curve Alert System	Other Systems
Fully Autonomous	✓	✗
Solar & Off-Grid	✓	✗
Specific to Blind Curves	✓	✗
Real-Time Traffic Decision Logic	✓	✗
Dual-End Vehicle Detection	✓	✗
Combined Audio-Visual Alert	✓	✗

Contact Us

Eulerian Bots Pvt. Ltd.

 **Email:** sales@eulerianbots.com

 **Phone:** +91 99305 55002

 **Website:** www.eulerianbots.com