Ghat warning System

The State Transport Authority (STA), Odisha has introduced an innovative initiative to enhance safety on ghat roads and reduce accidents in hilly terrains. The Ghat Road Warning System is specifically designed to improve traffic management and minimize risks in mountainous regions characterized by sharp curves, hairpin bends, blind spots, and limited visibility.

System Overview

The system establishes a real-time, duplex communication network between Roadside Units (RSUs) strategically installed on either side of a ghat section. By delivering early warnings to approaching vehicles, the system aims to significantly reduce collision risks and ensure smoother traffic flow.

Each RSU is equipped with advanced sensing, processing, and communication capabilities. These units exchange data using a ZigBee module integrated with a Long Range (LoRa)-based communication link, ensuring reliable bidirectional information transfer even in challenging terrain conditions.

Key Features

• Sensing range: Up to 20 meters for effective detection

• Adaptive output data rate: Up to 54 Hz, enabling rapid object recognition

• Stability mechanisms: Embedded electrical and optical crosstalk compensation

• Temperature toCommerce & Transport Department Government of Odishalerance: Operates reliably between -10 °C and +55 °C

• Ambient light compensation: Ensures performance even under strong infrared background conditions

• Solar-powered infrastructure: Low-maintenance and sustainable energy

Key Features

• This system represents a technology-driven approach to road safety, combining real-time communication with robust sensing capabilities.

• By proactively alerting drivers, it helps to reduce accidents, improve traffic flow, and set a benchmark for safety measures in hilly and mountainous terrains.
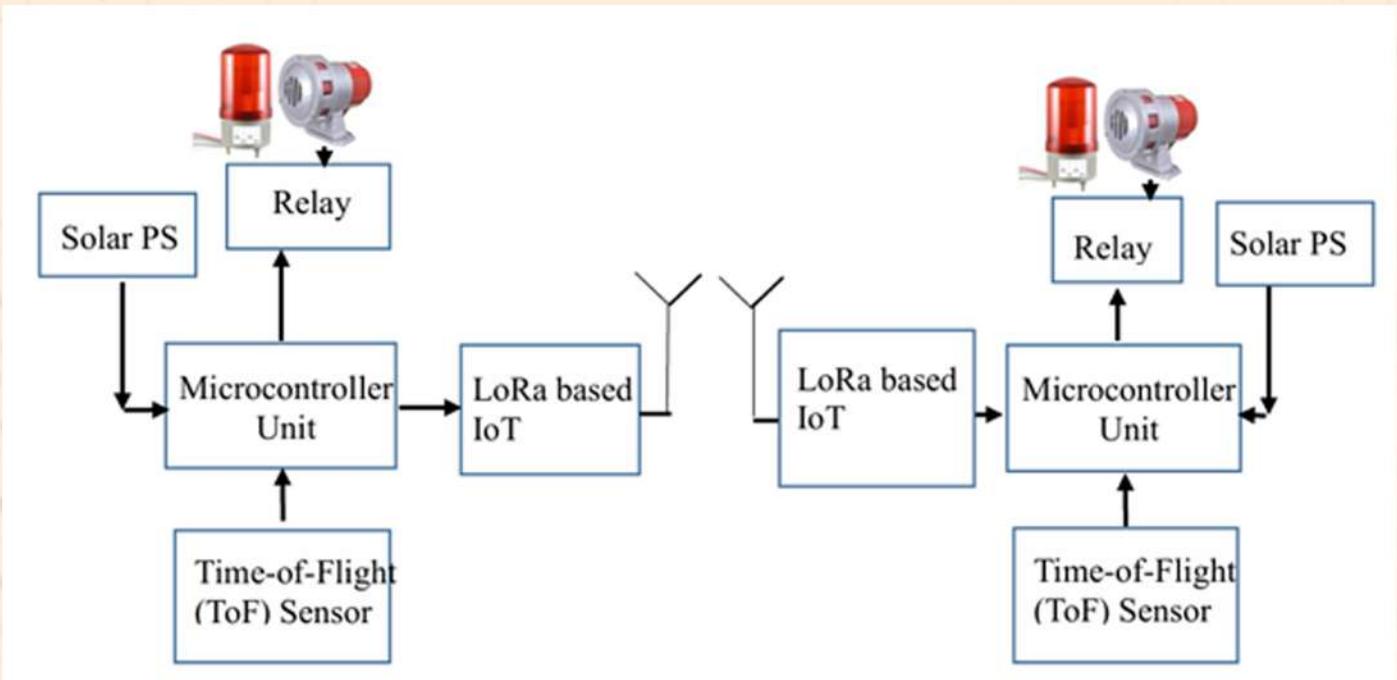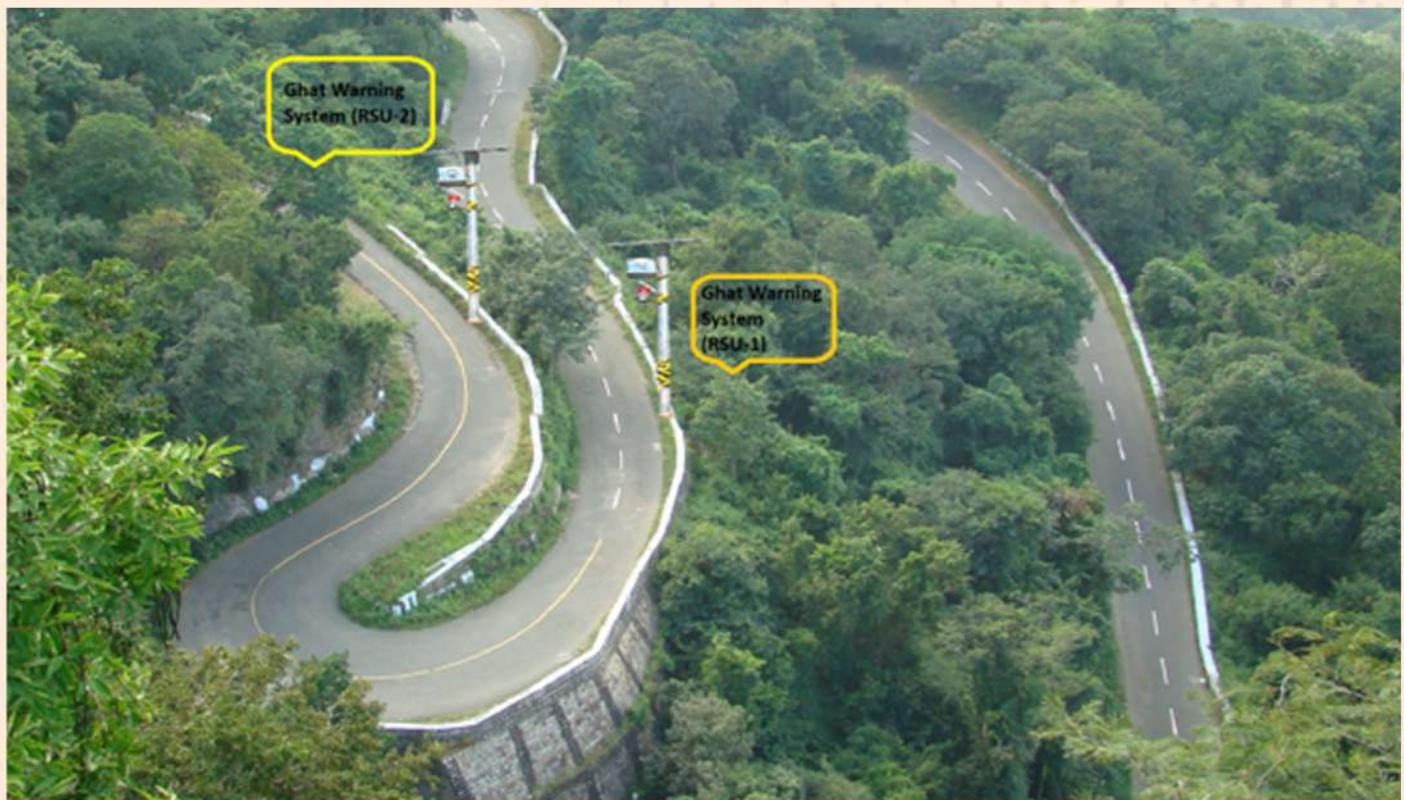
(Ghat Warning System- Block Diagram)

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