Rollover Prediction and Alert for All-Terrain Vehicle

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ABSTRACT

Researchers at the University of California Davis have developed a system designed to predict and prevent ATV rollovers, enhancing rider safety.

FULL DESCRIPTION

This technology encompasses an advanced prediction system for all-terrain vehicles (ATVs) aimed at preventing rollovers. It integrates an inertial measurement unit (IMU), local processing units, and a neural network model to analyze vehicle dynamics in real-time and predict rollover risks, issuing alerts to riders and potentially saving lives by preventing accidents.

APPLICATIONS

- ATV manufacturing and safety enhancements.
- Emergency response systems for rural and off-road environments.
- Vehicle safety research and development.
- Insurance industry, for risk assessment and policy adjustments.
- Recreational and agricultural ATV use.

FEATURES/BENEFITS

- Real-time rollover risk prediction enhances rider safety.
- Onboard circuitry and mobile application integration for comprehensive vehicle monitoring.
- Neural network model optimized for ATVs, considering unique dynamics and rider behavior.
- Works in areas without cellular service, crucial for rural and off-road environments.
- Supports emergency response by aiding in the location and rescue of injured riders.
- Prevents high risk of rollovers due to ATVs' narrow wheelbase and high center of gravity.
- Reduces difficulty in crash detection and prevention specific to ATV dynamics.
- Provides effective emergency response mechanisms for off-road accidents.
- Reduces communication errors and limitations of conventional crash prediction models.

PATENT STATUS

Patent Pending

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OTHER INFORMATION

KEYWORDS

all-terrain vehicle, ATV safety, crash prediction, emergency response, inertial measurement unit, neural network, off-road safety, rollover prevention, vehicle dynamics, wireless alert system

CATEGORIZED AS

- **Engineering**
  - Engineering
  - Robotics and Automation
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