Patent Search

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Abstract:

The present disclosure relates to systems and methods, and provides a pothole detection voice alert system (100) configured to detect potholes and other hazardous on roads and to send instant voice alerts to a driver about any abnormality on a road surface. The pothole detection voice alert system (100) includes a microcontroll infrared sensor (104) operating in accordance with a reflection-based pothole detection method (106), an audio playback module (108), and a voice alert system (118) infrared sensor (104) detects road surface reflection discontinuities caused by dry potholes, water-filled potholes, and submerged road hazards, and the microcontro processes said signals to activate the voice alert system (118) and an active buzzer (114), thereby lowering the risk of accidents and enhancing driver reaction time thr time voice warnings.

Complete Specification

Description:TECHNICAL FIELD

[001] The present invention relates to the field of road safety and intelligent transportation systems, and more particularly to a Pothole Detection apparatus for rea detection of potholes and other hazardous road conditions employing infrared sensors in combination with a vocal alarm system.

BACKGROUND

[002] The field of road safety and intelligent transportation systems has seen significant development in recent years. Vehicle-mounted sensing technologies, driver assistance mechanisms, and road monitoring tools have progressively evolved to address the risks posed by deteriorating road infrastructure. Conventional approa road hazard detection have typically relied upon visual cameras, accelerometer-based systems, or manual road surveys to identify surface irregularities. These appr have contributed meaningfully to road safety research; however, they may not address all operational scenarios encountered during real-world vehicular travel, par under adverse environmental conditions.

[003] Road surface discontinuities, including depressions, cavities, and structural voids commonly referred to as potholes, represent a persistent hazard to vehicula When a vehicle travels at moderate to high speeds, the driver's reaction time to an observed surface irregularity may be insufficient to permit safe maneuvering. At visibility, during nighttime driving, or when road surfaces exhibit degraded contrast, the likelihood of timely detection by unaided human perception may be substa diminished. Accelerometer-based systems may detect a pothole only after the vehicle has already traversed it, thereby providing corrective rather than preventive u which may limit their effectiveness as a pre-impact warning mechanism.

[004] Rainfall and flooding conditions introduce an additional layer of complexity that may render certain conventional detection approaches inadequate. When rai

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