A Survey on Comprehensive Exploration of Modern Perception System

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Abstract*: This review paper offers an in-depth analysis of recent advancements in image-based intelligent transportation systems. It provides insights into various approaches employed for detecting false images, license plate recognition, distributing emergency messages, as well as detecting and classifying vehicle accidents and road accidents. The research critically evaluates the pros and cons of deep learning techniques, including position-based routing, enhanced YOLOv8, optimal K-means with a convolutional neural network, and gated hierarchical multi-task learning. The investigation of an Internet of Things-based vehicle accident detection and classification system highlights the benefits of sensor fusion for precise accident detection; nonetheless, the evaluation raises questions regarding the scalability and reliability of smartphone sensors. The utility of a deep learning system for road accident identification utilizing artificially created multi-perspective movies is emphasized, along with warnings about possible limits in capturing real-world circumstances.*

Keywords: Internet of Things, Security, YOLOv8, License plate recognition, Deep Learning techniques, Optical K-means, Sensor Fusion

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[5] Deep learning models, have proven efficacy in pavement-related tasks such as distress detection [22,[43][44][45]. Additionally, many road management tasks involving visual inputs are likely to significantly benefit from the capabilities of neural networks [21,[45][46][47][48]

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