

Automated Garbage and Spit Detection with Penalty System using CNN

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Abstract: *This paper presents an innovative automated system for detecting garbage and spit in public areas using Convolutional Neural Networks (CNN). The proposed system aims to enhance urban cleanliness through real-time video analysis, improving detection accuracy and reducing the need for manual surveillance. Utilizing CNN, the system can identify and classify instances of garbage disposal and spitting, which are significant public hygiene concerns in urban environments. Upon detection, an automated penalty system is triggered to ensure consistent enforcement of regulations. This novel approach integrates existing surveillance infrastructure and provides a scalable solution adaptable to various urban settings. In addition to discussing the system's architecture, this paper also explores current research trends and challenges in deep learning-based object detection systems, particularly in handling small, irregular objects such as spit. The proposed system not only improves public health by addressing cleanliness issues but also promotes civic responsibility and adherence to urban hygiene regulations. This paper reviews state-of-the-art CNN models and identifies areas for future research, including the challenges of real-time detection under varying conditions and the ethical considerations of automated penalty systems..*

Keywords: Convolutional Neural Networks (CNN), garbage detection, spit detection, real-time video analysis, automated penalty system, public hygiene, urban cleanliness, object detection, surveillance infrastructure

