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Original Article

Human Detection Using Python And Computer Vision Techniques

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ABSTRACT

Human detection has become an essential area in computer vision due to its wide range of real-world applications. This study presents an approach for detecting human presence in images, recorded videos, and live camera streams using Python-based tools. The work focuses on combining classical feature-based techniques with modern deep learning models to improve detection accuracy and speed. The proposed system highlights practical implementation aspects and emphasizes safety and automation use cases.

Keywords: Human Detection, Computer Vision, OpenCV, Deep Learning, Python

INTRODUCTION

Detecting humans automatically from visual data plays a significant role in modern intelligent systems. It is widely used in surveillance, industrial monitoring, smart cities, and human–computer interaction. With the rapid growth of artificial intelligence, there is a need for systems that can quickly and accurately identify human presence in different environments. This paper focuses on designing a simple yet effective human detection model using widely available Python technologies.

LITERATURE REVIEW

Earlier methods for human detection mainly relied on handcrafted features and traditional machine learning algorithms. Techniques such as Histogram of Oriented Gradients (HOG) and Haar cascade classifiers were commonly used. Recent developments in deep learning have introduced advanced models capable of real-time detection with higher accuracy. Algorithms such as YOLO and SSD have significantly improved detection performance in complex environments.

PROPOSED SYSTEM

The proposed system is designed to detect humans from images, video files, and real-time webcam input. The system follows multiple stages including data acquisition, preprocessing, feature extraction, classification, and visualization. Python libraries such as OpenCV are used for image processing, while deep learning models are utilized for accurate detection. The system is designed to be efficient and adaptable to different scenarios.

SYSTEM REQUIREMENTS

Software Requirements: Python 3, OpenCV, NumPy

Hardware Requirements: Camera device, basic computing system with sufficient memory and processing capability

CONCLUSION

This paper presented a human detection system using Python and computer vision techniques. The integration of classical methods with modern deep learning approaches provides a balanced solution in terms of accuracy and performance. Such systems can be effectively used in safety-critical applications and automation systems. Future work can focus on improving speed and deploying the system on embedded devices.

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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