IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, March 2025

Smart Fire Detection System using Python and OpenCV

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Abstract: *Detecting fires is essential to maintaining safety in a variety of contexts, such as homes, workplaces, and industries. In this project, we describe the creation and deployment of an Internet of Things (IoT)-based fire detection system that combines machine learning with picture capturing capabilities. The system uses an Internet of Things (IoT) camera to capture photos of its environment, which are then processed by a convolutional neural network (CNN) that is particularly made to detect fire. Using visual clues, the CNN model analyzes the photos in real time to detect possible fire threats. The system sends out an alarm when a fire is detected, allowing for quick action and mitigation. Safety is improved by remote monitoring and early fire event detection made possible by the combination of IoT technologies and machine learning algorithms .and reducing any harm. The experimental results confirm the effectiveness and reliability of the suggested technique in accurately detecting fire incidents. By providing a scalable and effective way to improve safety in a variety of settings, this initiative advances fire detection technology.*

Keywords: Fire detection, Computer vision, OpenCV, Python, Machine

DOI: 10.48175/IJARSCT-23648
ISSN 2581-9429 IJARSCT