

Fire Detection System using OpenCv And Python

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Abstract: *Fire detection is vital for safeguarding lives and property. This project proposes a real-time fire detection system using OpenCV and Python. It utilizes computer vision techniques to analyze video feeds signs of fire or smoke. Key steps include preprocessing, feature extraction, and classification using machine learning algorithms like support vector machines or convolutional neural networks. Upon detection, the system triggers alerts such as sounding alarms or notifying authorities. Offering cost-effective and efficient monitoring, this system enhances safety in residential, industrial, and forest environments. Leveraging OpenCV's capabilities, it represents a promising approach to fire detection leveraging the power of computer vision and machine learning*

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

REFERENCES

- [1] Zhang, Z., Zhang, C., Li, Q., & Sun, S. (2019). A Survey of Recent Advances in Fire Detection using Computer Vision Techniques. arXiv preprint arXiv:1909.1016
- [2] Sharma, P., Bhatia, R., & Gupta, S. (2020). Fire Detection System Using Machine Learning Algorithms: A Review. In Proceedings of the International Conference on Machine Learning, Big Data, Cloud and Parallel Computing (pp.463-473). Springer, Singapore.
- [3] Prasad, S., Kulkarni, V., Deshpande, S., & Waghmode, V. (2020). An Analysis of Fire Detection Techniques using Cision and M Comuter Vachine Learning Algorithms. In Proceedings of the International Conference on Advances in computing and Data Sciences (pp. 251-258). Springer, Singapore
- [4] OpenCV documentation: <https://docs.opencv.org/>
- [5] Scikit-learn documentation: <https://scikit-learn.org/stable/documentation.html>
- [6] Chowdhury, M. E. H., & Rahaman, M. M. (2020). A Comprehensive Review of Fire Detection Systems Using Image Processing Techniques. SN Computer Science, 1(5), 1-20.