

# Acoustic Wave Based Forest Fire Extinguisher and Detection using Deep Learning

Mohamed Ajmal Husain. A<sup>1</sup>, Krishnamoorthy. P<sup>2</sup>, Prathiyuman. S<sup>3</sup>,  
Salman Paris. J<sup>4</sup>, Sarujasbenaslekha. G<sup>5</sup>

Anjalai Ammal Mahalingam Engineering College, Kovilvenni, India

**Abstract:** *Apart from causing tragic loss of lives and valuable natural and individual properties including thousands of hectares of forest and hundreds of houses, forest fires are a great menace to ecologically healthy grown forests and protection of the environment. Every year, thousands of forest fire across the globe cause disasters beyond measure and description. This issue has been the research interest for many years; there are a huge amount of very well studied solutions available out there for testing or even ready for use to resolve this problem. Forest and urban fires have been and still are serious problem for many countries in the world. Currently, there are many different solutions to detect the forest fires. People are using sensors to detect the fire. But this case is not possible for large acres of forest. In this paper, we discuss a new approach for fire detection, in which modern technologies are used. In particular, we propose a platform that Artificial Intelligence. The computer vision methods for recognition and detection of smoke and fire, based on the still images or the video input from the cameras. Deep learning method "convolution neural network" for finding the amount of smoke and fire. The accuracy is based on the algorithm which we are going to use and the datasets and splitting them into train set and test set.*

**Keywords:** Deep Learning.

## REFERENCES

- [1]. Krizhevsky, Alex, Ilya Sutskever, and Geoffrey E. Hinton. "Imagenet classification with deep convolutional neural networks." Advances in neural information processing systems. 2012.
- [2]. A. Grivei, A. Rdoi, C. Vduva and M. Datcu, "An Active-Learning approach to the query by example retrieval in remote sensing images," International Conference on Communications (COMM), pp. 377-380, 2016.
- [3]. G. Suci, et al. "Remote Sensing for Forest Environment Preservation" WorldCIST, Recent Advances in Information Systems and Technologies, pp. 211-220, 20117
- [4]. E. Olteanu, et al. "Forest Monitoring System Through Sound Recognition." In 2018 International Conference on Communications (COMM), pp. 75-80. IEEE, 2018.
- [5]. Arasvathi, Nahalingham and Chelsea, Ferdianti Kosasih "Study and Implementation of Internet of Things (IoT) Based Forest Fire Automation System to Detect and Prevent Wildfire". INTI Journal, 1(15), pp. 1-5, 2018.
- [6]. J. Papán, M. Jurecka, J. Púchyová, "WSN for Forest Monitoring to Prevent Illegal Logging", Proceedings of the Federated Conference on Computer Science and Information Systems, pp. 809-812, 2012.
- [7]. Krivtsova et al. "Implementing a broadcast storm attack on a mission-critical wireless sensor network" In: International Conference on Wired/Wireless Internet Communication, 2016.
- [8]. Chen, Thou-Ho, Cheng-Liang Kao, and Sju-Mo Chang. "An intelligent real-time fire-detection method based on video processing." Security Technology, 2003. Proceedings. IEEE 37<sup>th</sup> Annual 2003 International Carnahan Conference on. IEEE, 2003.
- [9]. Chen, Thou-Ho, et al. "The smoke detection for early fire-alarming system base on video processing." Intelligent Information Hiding and Multimedia Signal Processing, 2006. IHH-MSP'06. International Conference on. IEEE, 2006.
- [10]. Wang, Da-Jinn, Yen-Hui Yin, and Tsong-Yi Chen. "Smoke Detection for Early Fire-Alarming System Based on Video Processing." Journal of Digital Information Management 6.2018
- [11]. Noda, S., and K. Ueda. "Fire detection in tunnels using an image processing method." Vehicle Navigation and

