

Forest Fire Detection using Machine Learning with Raspberry PI

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Abstract: Laptop Vision primarily based fireplace detection utilize image process has the potential to be helpful in conditions during which standard ways cannot be adopted. the fire detection rule uses visual characteristics of fires like brightness, colour, spectral texture, spectral flicker, and edge trembling to discriminate them from different visible stimuli. There are numerous varied fireplace detection techniques like infrared device, a thermal detector, smoke detector, flame detector, and optical smoke detector. These techniques aren't constantly reliable as they are doing not perpetually notice {the fireplace the fire |the fireplace} itself however notice one or additional phenomena ensuing from fire, like smoke, heat, infrared, UV radiation or gas, that might be created in different ways and hence, produces several false alarms. By the assistance of laptop vision and image process techniques, it's achievable to get higher results than standard systems as a result of pictures will offer additional reliable data.

Keywords: Fire, OpenCV, Python, Image Process, Raspbian OS

REFERENCES:

- [1]. Yamagishi, H. and Yamaguchi, J.(n.d.). A contour fluctuation data processing method for fire flame detection using a color camera. 26th Annual Conference of the IEEE Industrial Electronics Society. IECON.IEEE International Conference on Industrial Electronics, Control and Instrumentation. 21st Century Technologies and Industrial, pp.824- 829, 2000.
- [2]. Pritam, D., and Dewan, J. H. (2017). Detection of fire using image processing techniques with LUV color space. 2nd International Conference for Convergence in Technology (I2CT), pp.1158-1162, 2017.
- [3]. Seebamrungsat, J., Praising, S., and Riyamongkol, P. (2014). Fire detection in the buildings using image processing. 2014 Third ICT International Student Project Conference (ICT-ISPC), pp.95-98, 2014.
- [4]. Azmil, M. S. A., Ya'acob, N., Tahar, K. N., and Sarnin, S. S. (2015). Wireless fire detection monitoring system for fire and rescue application. 2015 IEEE 11th International Colloquium on Signal Processing and Its Applications (CSPA), pp.84-89, 2015.
- [5]. Md Saifudaullah Bin Bahrudin and Rosni Abu Kassim "Development of Fire Alarm System using Raspberry Pi and Arduino Uno" in International Conference on Electrical, Electronics and System Engineering ,2013, pp. 43-47, 2013.
- [6]. Ku. R.A.Agrawal and Prof. S.T.Khandare "Fire Detection Using Image Processing" in International Journal of Advanced Engineering and Global Technology I Vol-03, Issue-12,pp. 1499-1503, 2015.
- [7]. Nurul Shakira Bakri, Ramli Adnan, Abd Manan Samad and FazlinaAhmat Ruslan "A Methodology for Fire Detection Using Color Pixel Classification" in IEEE 14th International Colloquium on Signal Processing and its Applications (CSPA 2018), Penang, Malaysia, pp. 94-98, 2018.
- [8]. Noorinder, Student Member IEEE, Jaspreet Singh,Member IEEE and EkambirSidhu,Member IEEE/IETE Raspberry Pi based Smart Fire Management System employing Sensor based Automatic Water Sprinkler in International Conference on Power and Embedded Drive Control (ICPEDC), 2017, pp.102-107.
- [9]. Ahmed Imteaj, Tanveer Rahman, Muhammad Kamrul Hossain, Mohammed Shamsul Alam and Saad Ahmad Rahat an IoT based Fire Alarming and Authentication System for Workhouse using Raspberry Pi 3 in

International Conference on Electrical, Computer and Communication Engineering (ECCE), February 16-18, 2017, Coks Bazar, Bangladesh, pp. 899-904.

- [10]. K. Ramya, "Survey on an Intelligent AAA Device for Fire Detection" in International Journal of Advance Research, Ideas and Innovations in Technology (Volume 4, Issue 1), pp. 669-673, 2018.
- [11]. Priyadarshini M Hanamaraddi* et al, "A Literature Study on Image Processing for Forest Fire Detection", in (IJITR) International Journal Of Innovative Technology And Research Volume No.4, Issue No.1, December - January 2016, 2695 - 2700.
- [12]. TurgayCelik Fast and Efficient Method for Fire Detection Using Image Processing in ETRI Journal, Volume 32, Number 6, December 2010, pp. 881-890.