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***Research Article** (Open Access)*

ACOUSTIC FOREST FIRE EXTINGUISHER USING DEEP LEARNING

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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 area great menance to ecological healthy grown forests and protection of the environment. To solve this we propose a platform in deep learning through Artificial intelligence (AI).The computer vision methods for recognition and detection of smoke and fire. In this method a training model is required. Based on the image the training model will create the conventional neural network (CNN). Implementing sonic waves can diminishes the fire easily especially in high frequencies. The main goal is to developed advanced concept of early forest fire detection and extinguisher. The sound extinguisher used to control the fire. The sound has the ability control the oxygen and fire particles. Extinguishing fire through sound bass sound like crazy. The setup can be placed in a drone. The drone could be able to switchover from places to places and can diminish fire at the early cost. The setup is quite clean method when compared to the old ways since they don't use chemicals and are very purest way to put off flame. This method is one of the real time life saver in today's crisis like amazon fire and Australian fire. If this method is implemented millions life's could be saved.

***Key Words:** Artificial Intelligence, CNN, sound Extinguisher, Adriano, Python*

INTRODUCTION
Every year thousands of forest fire across the globe cause disaster beyond measures and description.This issue has been research interest for many years there are a huge amount of very well studied solutions available out there for testing and resolving the problem. Forest fire in urban fires have been and still serious problem around many countries. People are using sensor to detect fire but they are not possible in large acres of forest. The trained model will become pre trained model once after conventional neural network. The implication of this sound wave extinguisher plays immense large role in protecting our flora and fauna and also human resources can be minimized.

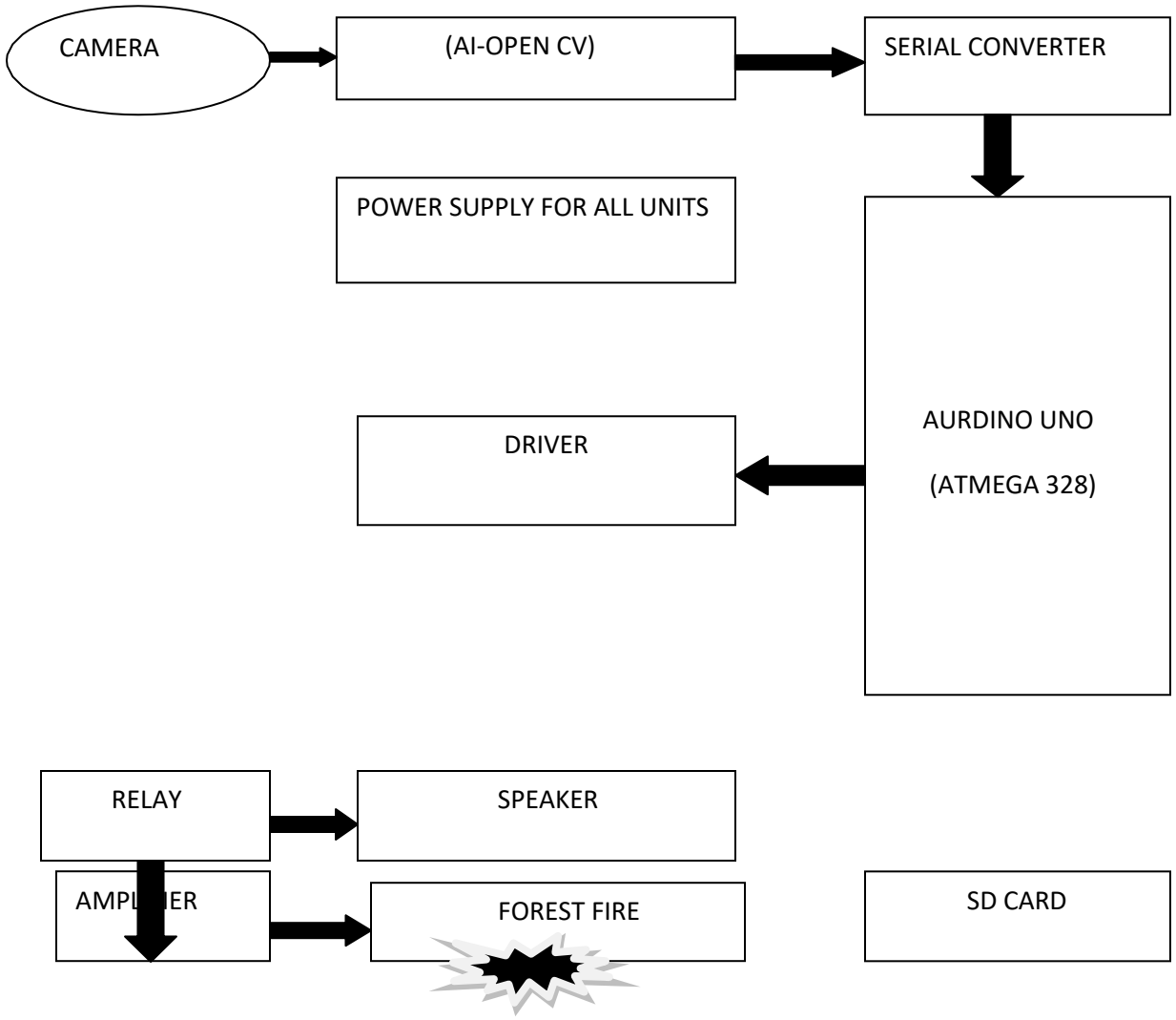
ARTIFICIAL INTELLEGENCE
Artificial intelligence sometimes called as machine intelligence which is demonstrated by machines in contrast to natural intelligence displayed by humans. It the area of computer science that emphasize the creation of intelligent machines that works and reacts like humans. Some of the activities computers with artificial intelligence are designed for speech recognition, learning, lanning, problem solving, knowledge, reasoning and perception**.**

DEEP LEARNING: Deep learning is an AI function that mimics the working of the human brain in processing data for use in decision making. Deep learning AI is able to learn from data that is both unstructured and unlabeled. Deep learning a machine learning subset can be used to help detect fraud or money laundering. It imitates the working of human brain in processing data and creating patterns for use in decision making. Deep learning is also called as deep neural network. Processing of big data is machine learning a self adaptive algorithm that gets increasingly better analysis and pattern with experience or with newly added data. Deep learning functions with neuron networks.

MATERIALS AND METHODS
Artificial intelligence, Deep learning,Convolutional Neural Network(CNN). Initially the process of gathering data depends on the type of project desire to make, if we want to make anMLproject that user

real time data, then we can build an ioT system .Data pre-processing is one of the most important step in deep learning .To train your artificial intelligence model, you need a collection of image called a data set.Now that have understand how to prepare own image dataset for training artificial intelligence models, proceed with guiding AI model to recognize professional using Imageries .Next move on the creating labels ,lables are the final output. It can also consider the output classes to be the labels. Labeled data mean groups of Sample that have been tagged to one or more labels. Converting xml file is a file extension for an extensible markup language file format used to create common information formats and share both format and the data on the world wide web ,intranets, and Elsewhere using standard ASCII text. Then creating a tensor flow record now new data compared with pre-trained data convolution neural network will created after that output will be display either fire detected or not.

BLOCK DIAGRAMZ



LITERATURE SURVEY

1.E.A.Yfantis at "UAV with autonomy, pattern recognition for forest fire prevention, and AI for providing advice to firefighters fighting forest fires",IEEE,2019.

UAV with long flight duration,powered by Li-Po batteries, and two-junction solar panels, with Artificial Intelligence, which includes flight autonomy, pattern recognition to recognize individuals and conditions likely to cause fires, and in case of a fire to assess the direction and speed of the fire to provide advice to the firefighters to effectively fight the fire. Communicating this information to firefighters either upon request, or as alarm events. The airplane electronic hardware software uses computational photography and virtual reality to create a detail 3-D forest video real time. The fire velocity and speed, the wind direction, and provide advice to the firefighters. Often time forest fires destroy the communication infrastructure, so the airplane has a router to enable firefighters to exchange, text and voice information .

2.Nappaphol Siriphun, Shigeru Kashihara, Doudou Fall, Assadarat Khurat at "Distinguishing drone types based on acoustic wave by Iot device",IEEE,2018.

In this theory the concept to distinguish drone types based on acoustic wave. Drone detection technique employs Dejavu that is an acoustic fingerprint identification tool and random forest to classify types of drones. First they collected a dataset for three types of drones: DJI Spark, Quad copter AR Drone 2.0, and Parrot Mambo drone. Then compared the detection performance based on the dataset. The experimental results showed that each drone sound can be classified by random foresting this paper, the performance of using acoustic fingerprint identification to detect and distinguish drone sounds, and the efficacy of random forest to classify the data. Each drone sound can be classified correctly using the random forest. The performance to identify the sound which produced by drones is different from songs in term of frequency was good in DJI Spark, but weak in Quad copter AR Drone 2.0, and Parrot Mambo drone. Eventually, a high amount of data in the database also increases the distinguish rate that helps to identify the sound from each drone.

EXISTING SYSTEM

The existing system design of long endurance UAV powered by solar energy, with autonomy flying over a pre specified forest area. Infrared bands to take clear and detail video of every part of the forest in order to recognize legal or illegal camp fires, dry areas providing hazardous condition, upload temperature, humidity and other ground sensor data ,helping to characterize the degree of forest fire vulnerability using pattern recognition ,and communicating this information to fire fighters either upon request ,or as alarm events. The airplane electronic hardware software uses computational photography and virtual reality to create a detail 3-D forest video real time. It communicates all this information to a ground station real time. Although the aircraft has autonomy, trained pilots in the ground station can override the autonomy and fly the aircraft. In case of forest fire the aircraft electronic hardware software system can compute the exact area affected, the fire velocity and speed, the wind direction, and provide advice to the firefighters regarding the optimal way of fighting the fire. Often time forest fires destroy the communication infrastructure, so the airplane has a router to enable firefighters to exchange, text and voice information

DISADVANTAGE

Sensors could not be used forlong distance and chemicals .will produce pollutant.

PROPOSED SYSTEM

We propose a platform of deep learning in Artificial intelligence. The computer vision methods for recognition and detection of fire. In this method a traning model is required ,for that we are going to take python. We should give various in large amount of images to training model. Based on the image training model will create convolution neural network after that it became pre-trained model. Now we can give a new data to compare with the pre –trained model to predict either fire or smoke. After the prediction of fire it will put off. In order to stop the fire, a new technology is used that is acoustic fire extinguisher which can extinguish fire by sound waves. Generally, fire extinguished by water or some type of chemicals like carbon dioxide, extinguishing fire through sound bass, sound like crazy. In reality sound waves have a potential to control oxygen and burning material. If these two gets separated the fire dies away. It works by deep bass sounds. Loud and deep bass sound dub music not only with put ears but also with your body therefore, sound waves produce the mechanical pressure that can able to handle the fire. As compared to other chemical components of classic extinguishers, this invention offers the

cleanest way of put-off flames. Once we predict the fire by deep learning with micro controller then the micro controller receives the data from pc. With the micro-controller a, SD card is connected and which is storing the sound files 30-60HZ range of frequency. A speaker and amplifier circuit is connected with controller. Once the micro-controller receives the data for fire detection from the pc, the controller will read the sound file from sd card and generate the high frequency sound wave to put–off the fire.

ADVANTAGES

Eco friendly, less pollutant and can be used enlarge Ares.

RESULTS AND DISCUSSION

Here a working prototype of the project is successfully designed and implemented to extinguish the forest fire. This is done by an convolution neural network in deep learning through artificial intelligence. Different types of fire images is already trained in the system. The newly captured fire image is compared with the previously trained image with accurately and sends mail to the audino . Immediately the speaker will produce the sonic waves. This high frequency waves is used to control the fire.

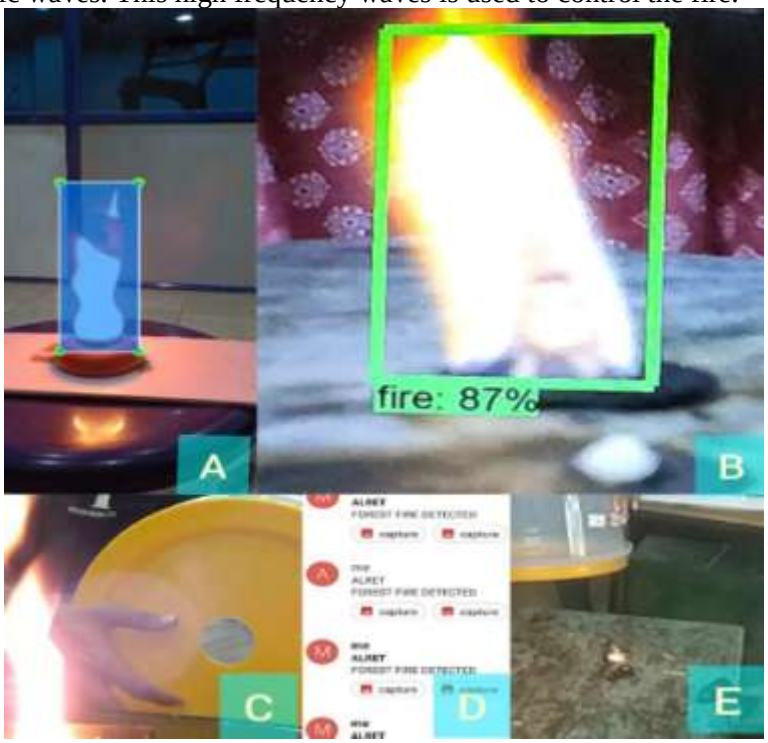


Figure1:A-Labelling done for jpeg to xml file to be understand by CNN.B-Fire is detected comparing with train and test image's-Sound extinguisher is shown to fire.D-Simultaneously the email will be sent to the forest officer. E-Fire is totally extinguished using sound waves.

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