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(57) Abstract:

Abstract of the Invention: The designed model will capture the sound from the environment and then the same which is in analog format will be converted to digital form and it is stored in the computer. Sound wave frequencies can be measured with a frequency counter or with a spectrum analyzer. These devices work by using a microphone to convert the sound wave into an electrical signal. The peaks and valleys of wave are counted to find the frequency. We measure sound intensity (also referred to as sound power or sound pressure) in units called decibels. Decibels (dB), A low-frequency sound has fewer waves, while a high-frequency sound has more. Sound frequency is measured in hertz (HZ) and is not dependent upon the medium the sound is passing through. Time Period - The time period is almost the opposite of the frequency. Sound waves travel at the same speed but vibrate in different ways. Some vibrate quickly and have a high frequency or pitch, while others vibrate slowly and give a lower pitch. When an object vibrates very fast it makes a high pitch sound. E.g. - A mouse can make a high squeak, because the sound made by the mouse vibrates very fast. The higher harmonics make the note sound louder partly because they add extra power to the sound wave, but also because our ears become more sensitive as the frequency increases with increasing frequency (at least up to about a kHz). Sound is the continual vibration of air particles and is an analogue signal. Therefore, we need to convert sound into binary to be able to process and store it using a computer. A sound card translates between the outside world's analogue information and a computer's digital information. Sounds created on a computer exist as digital information encoded as audio files. Digital sound is broken down into thousands of samples per second. Each sound sample is stored as binary data. Factors that affect the quality of digital audio include: sample rate - the number of audio samples captured every second. Bit depth - the number of bits available for each clip. Bit rate - the number of bits used per second of audio. The higher the frequency waves oscillate, the higher the pitch of the sound we hear. As you see, sound frequency is determined by the way in which sound waves oscillate whilst travelling to our ears, meaning that they alternate between compressing and stretching the medium, which in most cases is air. Once the data which is the sound is stored in digital format then the data will be processed by the model in order to check whether the data is of high frequency sound or low frequency sound. The task of classification here is done by the classification algorithm of machine learning and based on the outcome of the algorithm, the sound which is captured is labelled as high frequency beyond a threshold level or it is placed in a category of low frequency which is in the limits of given threshold level. Once the detection and classification process is complete then the device or the object which has generated this kind of sound which is beyond threshold level is identified and the message is passed to the same on the basis of the outcome generated by the machine learning model. Which is designed Once the object which has created this kind of sound is recognition then the information is passed to the object by identification and then accordingly certain measures are taken in order to see that the same is not repeated by the same object again and again. This will help to reduce the sound pollution which is increasing day after day in the urban areas. The overall concept of designing the framework is to see that the sound generated or created is captured or tapped and then the same is converted and stored in a system which then can be given as an input to the model which is designed and later the outcome of the model is passed on the device or the object created the sound causing sound pollution in the urban areas. All this will happen in span of seconds so that the idea of identification and controlling is hampered. The use of machine learning is to see that the different frequency sounds are recorded and then they are classified to make all this controlling possible it becomes much easier if the same is done by creating a model and then up training the same is used for the purpose of classification.

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