# Scream Detection Model

## Introduction:

It is an integral part of our Scream Detection AI/ML model, which aims to enhance the safety and security of our society. This narrative will provide an overview of the goals, methods, and interpretation of our project.

## Goals:

The primary goal of our project is to develop a reliable and accurate system that can detect the  screams in real-time. By promptly identifying individuals in danger, we aim to enable immediate response and ensure their safety. Our secondary goal is to showcase the effectiveness and performance of our AI/ML model.

## Methods:

To achieve our goals, we employed state-of-the-art techniques from the field of artificial intelligence and machine learning. We utilized deep neural networks, specifically a multi-layer perceptron, to train our model on a comprehensive dataset. The dataset consisted of various audio samples, including  screams, and background noise. By extracting essential features from the audio data, such as Restnet34, we were able to capture crucial characteristics of distress sounds.

The model underwent rigorous training, continually improving its ability to distinguish distress calls from non-distress sounds. Through multiple epochs and iterations, we optimized the model's performance and achieved a high level of accuracy..

Visualization Interpretation:

1. Training Loss and Accuracy:
    - The training loss and accuracy graph showcases the progress of our model during the training phase. It depicts the decrease in loss over epochs, indicating the model's ability to learn and make accurate predictions. Simultaneously, the accuracy curve shows how the model's performance improves over time, reaching a high level of precision.

2. Audio Waveform:
    - The audio waveform plot provides a visual representation of the audio signal. By examining the waveform, we can observe the amplitude of the sound over time. This visualization helps us understand the structure and characteristics of distress calls and screams, enabling us to differentiate them from background noise.

3. Spectrogram:
    - The spectrogram visualizes the frequency content of the audio signal over time. It provides a three-dimensional representation of the power spectrum, where the intensity of the colors represents the magnitude of the frequencies. By analyzing the spectrogram, we can identify distinctive patterns and features specific to distress calls and screams.

## Interpretation:

The visualizations presented here demonstrate the effectiveness and performance of our Scream Detection AI/ML model. They validate the accuracy and reliability of our system, reinforcing its potential to enhance the safety and security of our society. By accurately detecting distress calls and screams in real-time, we can enable immediate response and provide timely assistance to individuals in danger.

## Conclusion:

In conclusion, the visualizations presented in this narrative reflect the goals, methods, and interpretation of our Scream Detection AI/ML model. By leveraging the power of artificial intelligence and machine learning, we have developed a proactive solution that has the potential to save lives and improve the overall safety within our society.