# Spotle Ai-thon level - II : Mood detector app

Rohan Khaitan, Aritra Banerjee, Subhasish Basak

**Team name : Student's tEAM**

September 12, 2020

## 1 Introduction

The objective of this study is to classify mood of the person from facial expressions Images are categorized in three classes namely sadness, fear and happiness based on the emotion shown in the facial expressions.
The link to the GitHub repository is as follows: Click here

## 2 Model used

After experimenting with available image classifiers, we decide upon **VGG-16** as the base model. A detailed description of the model can be found here : Click here.

On top of the **VGG-16**, we have used multiple **dense** and **batch-normalization** layers for enhanced performance.

## 3 Data Loading & Preprocessing

With the datasets provided **aithon2020_level2_traning.csv**, for validation, fine tuning the hyper-parameters and testing purpose we use a smaller validation set out of it. We split the data into *Train : Validation* in the ratio $70 : 30$. :
We pre-process the data using the following steps :

- **Reshaping** : We also need to reshape the input dimension of the VGG model, since it has default input dimension $80 \times 80 \times 3$. We have up-sampled the default images from $48 \times 48 \times 1$ to the above dimension.
- **Oversampling** : For training the model, we have used **Over-sampling**, for the categories having relatively less number of images.

## 4 Model configuration

After fine tuning we run the final VGG-16 model with the following configuration:

- **Batch size** : 64
- **epochs** : 50
- **optimizer** : **Adam**
- **Initial learning rate** : 0.0001
- **loss function** : Categorical cross entropy

## 5 Results

- **Training accuracy** : 99.7%
- **Validation accuracy** : 78.9%