**Artificial Neural Network Post Training Qualification**

Create an application using artificial neural network with **any dataset** and **any architecture** based on the necessity of your application.

After that, you must answer the following questions completely:

1. What kind of architecture do you use and describe your reason(s) for choosing the architecture.
2. What kind of dataset do you use? Based on your analysis, please describe the features in the dataset.
3. Based on your analysis, what kind of data can be chosen as a target? Why do you use it as the target?

Note:

1. Please don’t use the dataset given at the training! (Choose the other dataset from internet or create it yourself).
2. You can use **any architecture** except for single layer feedforward (**perceptron** or **LMS**).
3. Please answer the questions clearly.
4. The architecture I used is CNN (Convolutional Neural Network), which is commonly used for image recognition and other classification tasks, because my main topic is emotion recognition from facial expression, so I am processing image in my program, thus this neural network architecture will be suitable. Based on my research it is suitable for image processing (Learning/detect/predict image) because first layer of CNN can detect simple pattern like edges and curve, and the next layers will detect more complex pattern other than edges and curve (we can say it can detect like facial features and objects) it also designed to process image because it preserves the spatial relationship between pixels in image) designed specifically for image machine learning.
5. The dataset that I used is FER 2013, it is a collection of grayscaled images each image in 48\*48 px. It has over 35k images, but I used 1200 + 300, around 1500 images, it already categorized to many emotion, but if im not mistaken in the code we will have to add more channel because it won’t work on single channel (must have 3 channel BGR). The features in dataset is the emotion itself, I want to make machine learning program that will predict emotion (actually I want to use OpenCV, and then predict my current emotion based on camera but I have channel problems (BGR BGR Color and other attributes not found even though I already successfully created the model and evaluate it and see the accuracy)).
6. The target chosen in this program is the emotion category that each image belongs to. This is because the goal of the program is to predict the emotion in people's faces based on the input image. The emotion category is a categorical variable with seven possible values (anger, disgust, fear, happiness, sadness, surprise, and neutral), and is therefore suitable for classification using a CNN model.