TEAM: **BLUE 2** TEAM LEADER: **DEEPAK THANDU**

**PROBLEM STATEMENT: Image compression over MNIST**

With the help of a Convolutional Auto encoder, we develop a deep learning system that compresses images into 128-dimensional dense vector and recreates the original image. Tools and Framework to be used are Tensor Flow and Keras.

**ABSTRACT:**

Image compression is one of the advantageous techniques in several types of multi-media services. This technique has evolved due to technology in the recent times and is one of the most important and successful applications in image analysis. One such technology is Artificial Intelligence and Machine Learning. They go hand in hand. We have images of various dimensions. One such dimension is 128 by 128. Images are formed by combining red, green and blue in various proportions to obtain any color in the visible spectrum. Such images are known as RGB images. Each image is made up of pixels. Some images have noise in them and are called noisy images. Image noise is usually a facet of electronic noise with random variation of brightness or color information in images. We propose a Convolutional Auto encoder neural network for image compression by taking MNIST (Modern National Institute of Standards and Technology) dataset where we up sample and down sample an image. Up sampling an image means increasing the quality of images by enlarging them whereas Down sampling is the process of reducing the size of an image without degrading its quality. We take an image 128 by 128 image with noise, consisting of three channels namely red, green, and blue. By developing a deep learning system, the image must be compressed and converted into a 128 by 1 dimensional dense vector. From this vector, we need to get the original image which is noise free which is of the original dimension of 128 by 128.

The main objective of the product or service being developed is to compress them. Image without affecting the quality of the image radically.

**KEYWORDS:** Image compression, Convolutional Auto encoder, MNIST, Deep learning, up sample, down sample, Convolutional Neural Network (CNN), noise, 128 dimensional dense vector, machine learning, Artificial Intelligence.