

### T MUKESH VARMA

**Final Project** 



# Image Colorization:-Adding colors to grayscale images using Convolutional Neural Network

The base idea is to train the model to predict plausible colorings to the grayscale images by training the model by giving sample images as inputs and making the model learn and make suitable prediction of given image. The CNN works by taking the sample image , designating it some weightage based on the different objects of the image, analyzing them and based on the knowledge gained it identifies and assigns colors to the image. CNN has three layers such as Convolution layer, Pooling layer, Fully-Connected layer which helps them for working with images.

# **AGENDA**

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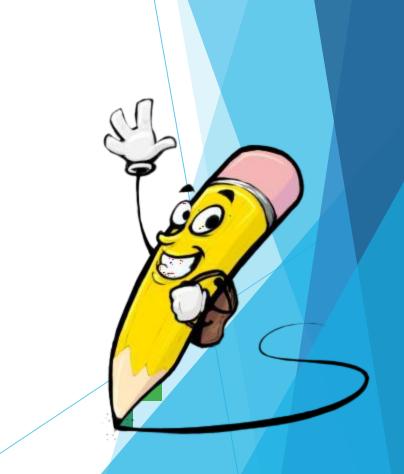
# PROBLEM STATEMENT

Developing a model that can automatically add color to grayscale images using deep learning techniques such as Convolutional neural network. It trains the model to predict plausible colorings based on input grayscale images. The model will automatically predict the colors for the image and applies them without any processing.



### PROJECT OVERVIEW

The project is about assigning colors to the grayscale image using deep learning technique such as Convolutional neural network. A convolutional neural network is a feed-forward neural network that is generally used to analyze visual images by processing data with grid-like topology. It's also known as a ConvNet. A convolution layer transforms the input image in order to extract features from it. In this transformation, the image is convolved with a kernel (or filter). A kernel is a small matrix, with its height and width smaller than the image to be convolved.



#### WHO ARE THE END USERS?

Some of the important applications of this field are science and technology including computer vision, remote sensing, feature extraction, face detection, forecasting, optical character recognition, finger-print detection, optical sorting, argument reality, microscope imaging, lane departure caution. It also has applications in medical imaging, satellite imaging, and improving the visual quality of multimedia content.

### YOUR SOLUTION AND ITS VALUE PROPOSITION



This solution involves creating an cnn model where the model gets trained using the sample images provided as input. CNNs work by applying a series of convolution and pooling layers to an input image or video. Convolution layers extract features from the input by sliding a small filter, or kernel, over the image or video and computing the dot product between the filter and the input.

## THE WOW IN YOUR SOLUTION

- -> No require human supervision required.
- -> Automatic feature extraction.
- -> Highly accurate at image recognition & classification.
- -> Weight sharing.
- -> Minimizes computation.
- -> Uses same knowledge across all image locations.



# MODELING

**Environment:** Defines the Image colorization process and provides methods for interacting with the agent.

CNN: Implement the cnn algorithm for analyzing and assigning appropriate colors to the images.

**Training:** By using the cnn layers the system can keep record of the images and their colors. Using the training it will add colors by identifying each objects.

# **RESULTS**

The result of the is an cnn model capable of generating and adding colors to the grayscale image. The color assigning method is accurate with each image predicted and assigned with correct and appropriate colors.

