

CHAPTER 1

INTRODUCTION

1.1. Background

Internet have been widely spread in recent years and with such phenomenon comes along variety of information enter the web. All sorts of information can be found in the internet however the source and credibility might be questionable , and in such a large pool of data , tracking down the resources of those informations would be an arduous journey. Even more so those informations could be tempered to begin with. And with the ever progressing technologies , many software or program that allow you to edit by removing and adding parts of information , can be easily accessed.

One of the type of information that can be found on the internet is image. An image or picture usually serve as a proof that can assure the credibility of a statement. However those very images often than not have been changed in a way that would be beneficial for the one who forged them. To avoid being misguided by the false image taking a closer look the an image could allow to discern whether it's an authentic or forged photo. From forgery error , slight different in lighting , out-of-place outline , or even unusual texture.

Discerning whether an image is forged or not is one problem , but as said before there are large number of information in the internet , trying to look into those images one by one is not feasible. In such predicament , it is the moment where technologies step in , with artificial intellegent it is possible to process and discern a large number of images consecutively. But even an artificial intellegent need some kind of lead to help it learn more about the data given to it , in which pre-processing to those input data must be done or else it would turn into a guessing game. Pre-processing used in this project is Chan-Vese and Gabor filter. Chan-Vese filter is used to do segmentation for objects with no boundaries which gives a clear border between an object and another. While Gabor Filter is used to segment a pattern of texture where in this case gives a hint on objects with more or less intense texture than the rest of the image.

1.2. Problem Formulation

1. Build a working ResNet50 and Combine Feature model

2. How difference in parameters can affect the performance of the model ?
3. Will there be a difference between using grayscale and chroma as an input for pre-processing ?
4. Can Resnet50 with Combined Feature model reliably discern whether an image is authentic or forged ?

1.3. Scope

The project will revolve around the very build of the model , various training and testing with different parameter and finally comparing the performance of the model. How well the model perform will be calculated by the test accuracy and the accuracy of the last training epoch.

1.4. Objective

The objectives of this project is to build a working Resnet50 model that have been trained to reliably discern if an image have been edited or not by using a dataset of images that will go through pre-processing by Combined Feature of Chan-Vese and Gabor filter. And , to see how various parameter and change affecting the model performance.