Authentication Verifier for Images and its Location using TensorFlow/Keras

# -----Abstract----------------------------------------------------------------------------------

These days, where filters and photoshop is rampant, one can never be sure of whether what you see is truly what it is or not. Especially in situations where Money & Property is concerned. This leads to in-person inspections and wastage of various resource that could be used elsewhere. So we have the idea of making a image-verifier that not only verifies the authenticity of the image itself, but also the location at which it was taken. Allowing us to cross verify with the database provided by the facility for whether the image was taken at that specific location or not.

We believe the main use for this project could be in government jobs, in which we could check whether the construction of a facility was done properly(No Photo Editing) and on proper location. This could help the concerned people keep a track of progress of these facilities. The location that the facility has to be in will be given as a mini database and submitted into the Application which will be used to cross-verify.

The project is divided into 4 Major Modules,

* Module 1: Obtaining Geo-location Metadata from the Image.
  + In this stage we will be using OSINT Framework for extracting the metadata.
  + This data will be used futher in module 3.
* Module 2: Detection of Image Manipulation using TensorFlow/Keras
  + We plan on including a way to check for filters and alterations using photoshop
* Module 3: To assess whether the geo-location of the image is accurate.
  + Finding the distance between the pin-point location of the image extracted in module 1 and the geo-data provided in the database by the user.
  + Using this distance we will verify whether the image was taken in the vicinity of the property at which the facility will be built.
* Module 4: Frontend
  + We plan on building a Web Application for start and continue to a Mobile Application for convenience.
  + The Application will be the interface with the user where the user will be allowed to upload the image and the database(if required).