# Real vs Fake – Hackathon – CNN & Transfer Learning

### ****Problem Statement****

With the rise of electronic media in the form of social media primarily, there has been a lot of misinformation spread in the form of images that are artificially created using modern augmentation tools. In order to segregate legitimate information from artificially created images, it is important to use modern technological advances to stop the spread of misinformation.

**The Fake vs Real Image Detection Challenge**draws inspiration from the above-mentioned misrepresentation of data and tries to solve this problem using computer vision techniques. Fake and Real images have been provided and we need to build a model that can segregate test images into Fake and Real Images. A mobile application or a software integrated into the mobile’s operating system can be built using this technology which can segregate fake images from real ones.

### ****Goal:****

The goal of this hackathon is to build a CNN model from scratch and compare it with that of using pretrained models that can accurately distinguish between fake and real images using the provided images for training. The images provided belong to two classes for images that were actually clicked using cameras vs images that were artificially created using Generative Adversarial Networks (GANs).

##### CNN

* The initial trial was a basic CNN model with 5 layers, and accuracy achieved was 48%.
* In order to fine tune the model to improve accuracy different optimizers were adopted with default parameter value. Of all the optimizers used, ADAM had the best accuracy
* The image was resized to 32\*32 and then 128\*128, but the maximum accuracy here was 49%

##### Transfer learning

Different types of pre-trained model used –

1. Mobilenet
2. Restnet50
3. VGG16

All of these were used with ‘imagenet’ with various image sizes and various batch-sizes. The bets accuracy was received with Restnet50.

##### Scope of further improvement:

* Image augmentation techniques
* Trying other datasets for training like coco and googlenet