# Overview

In this project, we will attempt to propose a consumer and research idea which addresses image to image translation. Research can often be hindered by manual image evaluation or difficulty finding the correct images for their work. The ability to transforming images into their high-quality counterpart can help with identification. This can be used later in the fields of Academic, Historical and Medical research.

## Value of the Solution

Images has a valuable role it plays withing society. With personal images, people are immediately judged with any pre-conceived biases they may have. With the help of an Artificial Neural Network and Generative Adversarial Network, we will create a model which will first be able to have regular faces smile. The ability to manipulate images with research requirements can save time. Secondly, as a consumer, the value of making images smile would either bring joy, entertainment or open the doors for professional

This technique can be later expanded into image restoration, creation. Create high quality images which can mimic what a severe medical condition such as cancer should look like, and even few the progress of the development of cancer or historical images over time.

## data source

The UTKFace image dataset is available for non-commercial research purposes only. It is maintained by ssusanqq and located at this url: <https://susanqq.github.io/UTKFace/> .  
  
The contact information for any questions with regards to the dataset are Yang Song and Zhifei Zhang.

## techniques

I will be anticipating using the following tools and techniques.

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| Tools | Techniques |
| Python, Machine Learning Libraries such as SKLearn | Artificial Neural Networks |
| TensorFlow or Pytorch | Generative Adversarial Networks (GAN) or cycleGAN |
|  | Unsupervised ML methods such as Clustering |

## Anticipated challenges

Some of our anticipated challenges will be the following:

* Loading and understanding the data / Feature selection and engineering
* Selecting the correct parameters and fine tuning the model.
* Optimizing the model for maximum effectivity / Producing efficient and effective results.