# **Title**: FAcial gans and facial expressions

# Overview

In this project, we will attempt to propose a consumer product which will assist in fixing or upscaling photos. Specifically, we will attempt to turn facial expressions of individuals more pleasant by having them smile.

The ability to turn photos of individuals and make them smile will help address the issue for consumers when looking at and the preservation of family photographs. In addition, turning facial expressions can also assist research and academia in generating more human and natural expressions of historical figures.

## Value of the Solution

One of the most treasured and valuable assets of an individual are memories, held by photos. The ability to enhance and improve these photos by something as simple as making them smile already provides value to the consumer. From an individual to businesses and organizations, there are also several use cases. Parents have difficulty making children smile in photos, businesses may use this to improve marketing materials showing of people at their best as they smile. These are only a few of the best use cases which brings value to the solution when we can make an individual smile through photos and the joy of seeing them

## 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:

* Length of time it will take to train / Feature selection and engineering
* Selecting the correct parameters / Model optimization
* Producing great accuracy and scores from the model.