Project Report: Facial Key point Detection

Sabarish Sridhar, April 11, 2021

[Problem Statement 1](#_Toc69035598)

[Implementation Steps 1](#_Toc69035599)

[Data collection 1](#_Toc69035600)

[EDA 1](#_Toc69035601)

[Baseline 1](#_Toc69035602)

[Augmentation 2](#_Toc69035603)

[CNN Implementation 2](#_Toc69035604)

[Real time implementation 2](#_Toc69035605)

# Problem Statement

Challenge is to develop a vision system capable of detecting facial key points in an image with high predictive accuracy.   
Desirables

* Good Model
* Real time detection

# Implementation Steps

1. Data Collection/Loading
2. EDA of Data
3. Baseline Evaluation
4. Evaluation with Augmentation
5. CNN Based Evaluation
6. Implementation on real time video.

## Data collection

* Kaggle’s Facial Key point Challenge, YouTube Face’s Dataset (Alternatively)

## EDA/ Preprocessing

* Helper function for
  + **Displaying, preparing the images into an image data set**
  + For creating the target key points

## Baseline

* Multilayer Perceptron type architecture.

Input: (96x96) -> flatten ->Hidden Layer - > 30(output layer)

## Augmentation

* Test with **Basic Augmentation: Flip left, right, etc.**
* All Augmentation techniques

## CNN Implementation

* Use TensorFlow’s CNN Implementation

## Real time implementation

* TBD / Research needed