

# Cartooning of an image using Python

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PROBLEM



REAL IMAGE



CARTOON IMAGE

How ?

# FEATURES OF **CARTOON** IMAGES

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— HOMOGENOUS COLORS

— CLEAR EDGES

**ACHIEVED**



**THROUGH**

— REDUCTION OF COLOR PALETTE

— EDGE DETECTION



# METHODS

## A. LOADING IMAGES

## B. CARTOONING IMAGES

1. REDUCING THE COLOR PALETTE OF THE IMAGE USING BILATERAL FILTER.
2. CREATING AN EDGE MASK USING ADAPTIVE THRESHOLDING.
3. COMBINING THE BILATERAL FILTERED IMAGE WITH THE EDGE MASK..





## LOADING IMAGES

1. DATASET (1) FOR FACES LOADED FROM KAGGLE.
2. ZIPFILE LIBRARY USED TO PROCESS THE DATASET  
IN FROM OF A ZIPPED FILE AND STORE THE  
IMAGES IN A LIST.
3. PIL LIBRARY USED TO OPEN THE IMAGES WHICH  
THEN CONVERTED FROM PIL FORMAT TO  
OPENCV FORMAT.

kaggle™



pillow



# CARTOONING IMAGES

## 1. REDUCING THE COLOR PALETTE OF THE IMAGE USING BILATERAL FILTER



DOWN-SAMPLING 3 TIMES

APPLYING REPEATED BILATERAL FILTER

UP-SAMPLING TO ORIGINAL SIZE



# CARTOONING IMAGES

## 2. CREATING AN EDGE MASK USING ADAPTIVE THRESHOLDING



CONVERTING TO GRAYSCALE AND  
APPLYING MEDIAN BLUR FILTER

APPLYING ADAPTIVE THRESHOLDING

CONVERTING FROM  
GRAYSCALE TO RGB



# CARTOONING IMAGES

3. COMBINING THE BILATERAL FILTERED IMAGE WITH THE EDGE MASK.



BILATERAL FILTERED IMAGE



EDGE MASK





# RESULTS



ORIGINAL IMAGE



CARTOON IMAGE



## LIBRARIES USED

- NUMPY
- OPENCV
- MATPLOTLIB
- PIL
- ZIPFILE



python



## FUTURE WORK

- CREATING A MOBILE APP USING QT FRAMEWORK TO CONVERT REAL IMAGES INTO CARTOON EASILY AND QUICKLY.
- APPLYING A MACHINE LEARNING ALGORITHM (GAN) TO CREATE IMAGES WITH BETTER CARTOONISH EFFECT.



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thank  
=you=