



# IMAGE TO PAINTING

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The background image shows an artist with long brown hair, seen from the back, sketching a portrait on a canvas. The artist is wearing a light-colored long-sleeved shirt and dark jeans. The studio environment is visible, with various art supplies and other canvases in the background. A large, detailed sketch of a man's face is visible on the left side of the background.

# **CONVERTING IMAGE INTO ANIME SKETCH**



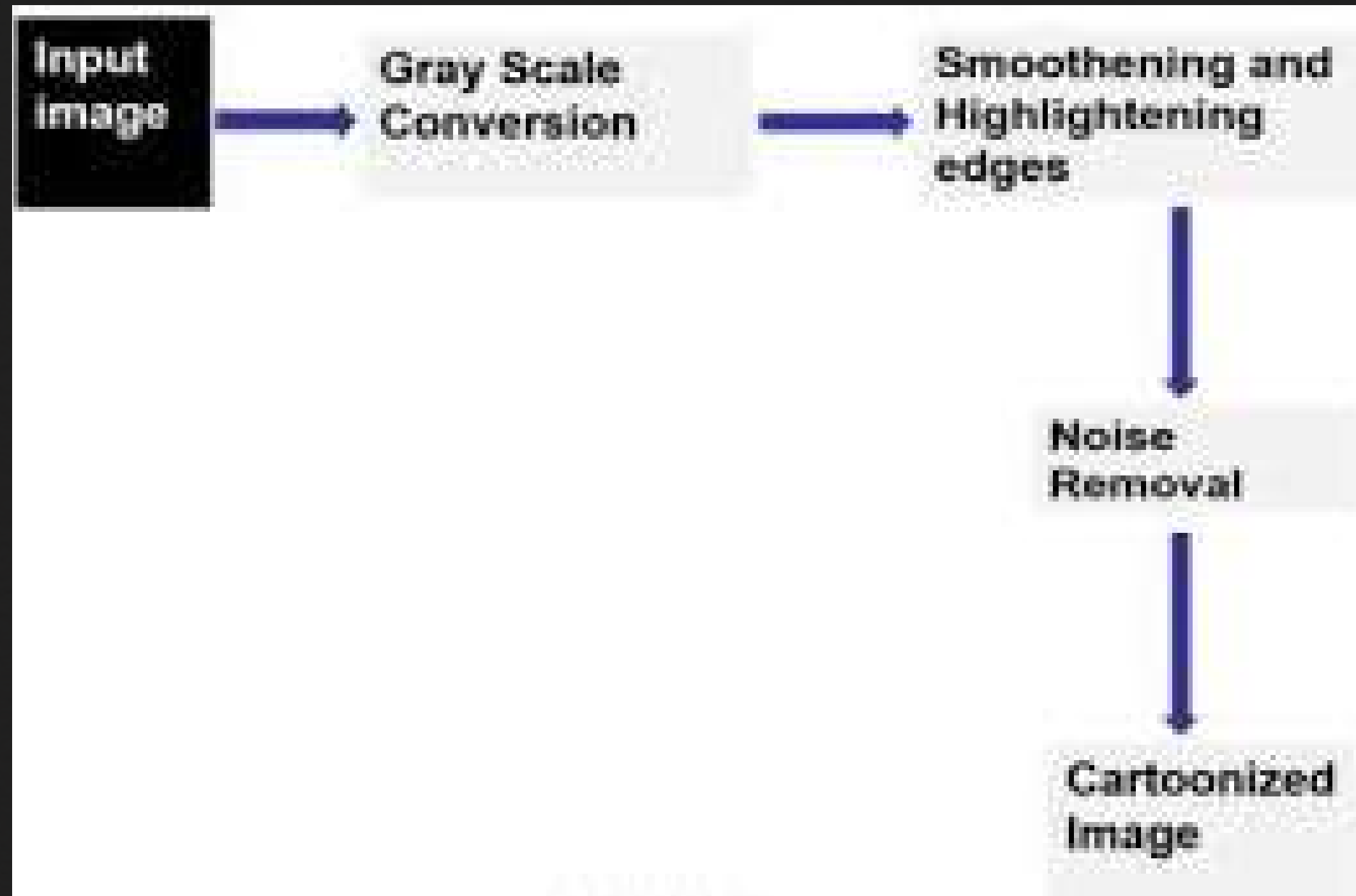
# APPLYING ANIME FILTER TO IMAGE

## **steps:**

- 1.Install Open CV**
- 2.Import necessary Libraries**
- 3.Defining the anime filter function**
- 4.Import image**
- 5.Apply anime filter**
- 6.Get the cartoonized image**



# WORKFLOW



# OUTPUT

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The background image shows an artist with long brown hair, seen from the back, painting a portrait on a canvas. The artist is wearing a light-colored long-sleeved shirt and dark jeans. The studio is filled with various art supplies, including brushes and other canvases. A large, detailed oil painting of a man's face is visible on the left side of the frame. The overall lighting is soft and focused on the artist's work.

# **CONVERTING IMAGE INTO OIL PAINTING**




A woman with red hair, wearing a white shirt and brown overalls, is standing in an art studio, painting on a canvas mounted on an easel. She is holding a paintbrush in her right hand. The background shows shelves with various art supplies and a lamp.

# Oil Painting Conversion Steps


1. Upload a RGB/RGBA image (number of channels in image can't be less than 3).
2. Set brush size and expression size (higher size means more reduction in image details).
3. Set margin. Used to avoid painting near the edges of the image to retain form of objects in image.
4. Initialize empty image (all 0s) of input image size.
5. Generate and apply random brushes on empty image having brush sizes in range specified above with random rotations in brush angle.
6. This is the result image.




# Process



Each brush stroke, defined by an ellipse, samples pixels from the input image and places them in corresponding locations in the result image. The brush strokes are randomly chosen but consistently apply pixels from specific locations in inputImage to result.



By iterating over the image and applying brushes, the spatial relationships of pixels are maintained to some extent. Although the brush strokes introduce some randomness, the overall structure of the image is preserved because each stroke is based on actual pixel data from inputImage.



This creates a stylized version of the input image by using elliptical brushes to apply pixels from original image to a new canvas (result). Thus, result image captures the essence of input image while adding a oil painted effect. The random choice of brushes and their application introduces a level of abstraction, blending the input image's details with the stylistic effect of the brushes.



**Input Image**



**Output Image**





The background image is a dimly lit artist's studio. On the left, a large, detailed oil painting of a man's face is visible. In the center, a person with long hair is seen from behind, focused on sketching on a canvas mounted on an easel. The overall atmosphere is creative and artistic.

# **CONVERTING IMAGE INTO PENCIL SKETCH**





# IMAGE SKETCHING

- The process of converting a photograph or digital image into a sketch-like representation.
- Used for artistic effects, enhancing visuals, and various applications in graphic design, animation, and digital art.



# BASIC TECHNIQUES

## Grayscale Conversion



Simplifying the image by converting it to shades of gray, which forms the basis for sketching  
Weighted Sum Method:  
 **$\text{Gray} = 0.299 \times R + 0.587 \times G + 0.114 \times B$**

## Image Inversion



Image processing technique where the intensity values of an image are inverted.  
Inverting pixel values to enhance features and create a negative effect.  
 **$\text{Inverted Pixel} = 255 - \text{Original Pixel}$**

## Blurring and Smoothing



Applying filters to reduce noise and achieve a more natural sketch effect.  
• Common filters: Gaussian Blur, Median Blur.  
 **$G(x,y) = \frac{1}{2\pi\sigma^2} \exp(-\frac{x^2+y^2}{2\sigma^2})$**



# MATHEMATICAL APPROACHES

## Histogram Equalization

Enhancing contrast by redistributing pixel intensity values, improving the sketch detail. This method improves the visibility of features in an image, making details more discernible.

### 1. Compute the Histogram:

- The histogram of an image represents the frequency of each intensity level (from 0 to 255 for an 8-bit grayscale image) in the image.

### 2. Calculate the Cumulative Distribution Function (CDF):

- The CDF is computed from the histogram. It maps the cumulative frequency of intensity values, providing a way to transform the intensity values so that they spread more evenly.

### 3. Create a Transformation Function:

- Using the CDF, a transformation function is derived to map the original intensity levels to new levels. This function aims to redistribute the intensities uniformly across the available range.

### 4. Apply the Transformation:

- The transformation function is applied to each pixel in the original image, resulting in a new image with enhanced contrast.





# MATHEMATICAL APPROACHES

## THRESHOLDING

1. A simple yet powerful image processing technique used to segment an image into foreground and background regions. It converts a grayscale image into a binary image, where pixel values are set to either 0 (black) or 255 (white) based on a specified threshold value.

### 1. Global Thresholding:

- A single threshold value is chosen for the entire image.
- All pixels with intensity values above the threshold are set to one value (e.g., white), and all pixels below the threshold are set to another value (e.g., black).

### 2. Adaptive Thresholding:

- Different threshold values are used for different regions of the image.
- Useful for images with varying lighting conditions.

### 3. Otsu's Thresholding:

- An automatic thresholding technique that determines the optimal threshold value by minimizing the intra-class variance (or equivalently, maximizing the inter-class variance).





# OUTPUT

✓ 0.2s

Original Image



✓ 0.1s

Final Sketch Image





**CONVERT IMAGE INTO  
WATER COLOR SKETCH**





## INTRODUCTION

we will explore how computer vision can be used to transform images into watercolor sketches. We will discuss the techniques and applications of this innovative approach in digital art.



# WATER COLOUR IMAGE

## STEPS

- Install open cv
- Import necessary libraries
- Select the original image
- Preprocessing the image
- Convert to Grayscale
- Apply Smoothing Filters
- Edge Detection Algo (used to extract the outline feature)
- Create a Mask for image
- Apply Watercolor Texture
- Blend Original Image and Texture
- Review and Refine
- Save the image





# OUTPUT

**ORIGINAL IMAGE**



**FINAL IMAGE**





**Thank  
You!**

