Report

Method Overview

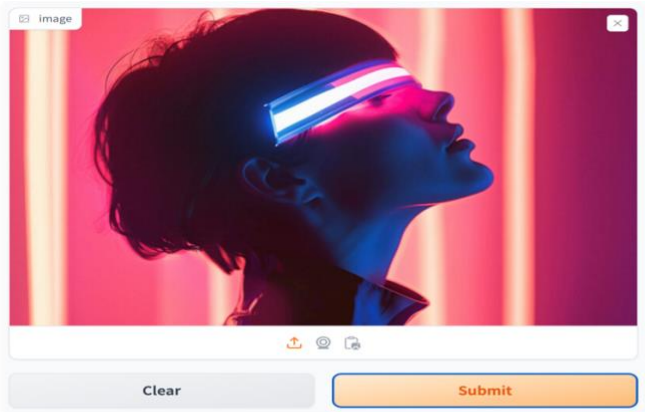
This project implements an image-to-ASCII conversion method that transforms color images into ASCII art representations. The conversion process involves several steps:

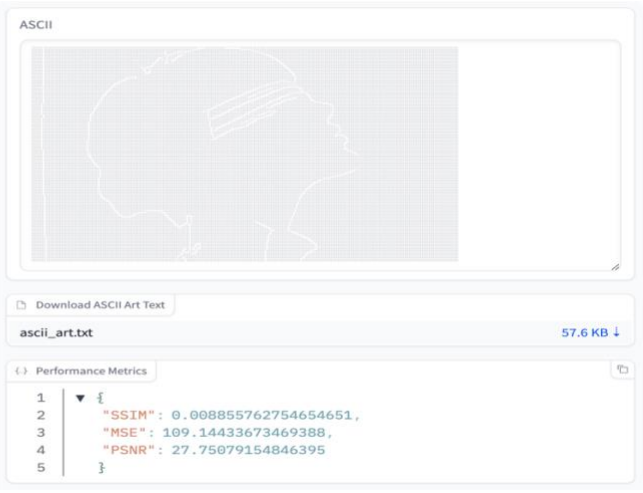
1. **Image Preprocessing**:
   - The input image is resized to a predefined width while maintaining the aspect ratio. This ensures that the final ASCII art maintains a visually accurate representation of the original image.
2. **Grayscale Conversion**:
   - The resized image is converted from BGR (Blue, Green, Red) format to grayscale. This simplifies the representation since each pixel is now a single intensity value rather than three color channels.
3. **Edge Detection**:
   - The grayscale image undergoes Gaussian blurring to reduce noise, followed by Canny edge detection. This process highlights the prominent edges in the image, which are crucial for creating recognizable ASCII art.
4. **ASCII Mapping**:
   - The edges are mapped to a predefined set of ASCII characters based on pixel intensity. Darker pixels are represented by more complex characters (e.g., @, #), while lighter pixels are represented by simpler characters (e.g., .,).
5. **Output Generation**:
   - The ASCII art is saved as a text file for download, and performance metrics are computed to evaluate the quality of the transformation

Performance Metrics

1. **Structural Similarity Index (SSIM)**:
   - Measures the similarity between the original grayscale image and the edge-detected image. Higher SSIM values (range: 0 to 1) indicate better structural similarity.
2. **Mean Squared Error (MSE)**:
   - Quantifies the average squared difference between the original grayscale image and the ASCII representation. Lower MSE values indicate better quality.
3. **Peak Signal-to-Noise Ratio (PSNR)**:
   - Represents the ratio between the maximum possible power of a signal and the power of corrupting noise. Higher PSNR values indicate better quality.

Result:





image

Clear | Submit

ASCII

Download ASCII Art Text

ascii_art.txt 44.1 KB

Performance Metrics


```
{
  "SSIM": 0.015369471293731398,
  "MSE": 103.88204444444445,
  "PSNR": 27.965398727196202
}
```


image

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ASCII

Download ASCII Art Text

ascii_art.txt 58.5 KB

Performance Metrics


```
{
  "SSIM": 0.04329384551512068,
  "MSE": 100.46408710217756,
  "PSNR": 28.110695186209615
}
```