

IMAGE PROCESSOR APP GUI

Report Overview -

The 28-page technical report provides a complete analysis of your Streamlit-based image processing application, covering:

Key Sections Included:

Architecture Analysis

- Object-oriented design patterns used
- Dependency analysis and system requirements
- Modular structure breakdown

Comprehensive Functionality Review

- Color Conversions: RGB to grayscale, HSV, sepia, and color inversion
- Geometric Transformations: Rotation, scaling, translation, and flipping operations
- Filtering Operations: Gaussian blur, sharpening, emboss effects, and basic edge detection
- Enhancement Operations: Histogram equalization, contrast stretching, brightness adjustment, and gamma correction
- Advanced Edge Detection: Sobel, Canny, Laplacian, and Prewitt algorithms

Mathematical Formulations

- Detailed mathematical equations for each image processing operation
- Transformation matrices and kernel definitions
- Algorithm explanations with proper LaTeX formatting

Technical Implementation

- Memory management strategies
- Error handling approaches
- Performance optimization techniques
- Code quality assessment

User Interface Design

- Layout structure analysis
- CSS styling implementation
- User interaction flow documentation

Enhancement Recommendations

- Future feature suggestions
- Scalability considerations
- Advanced operation possibilities

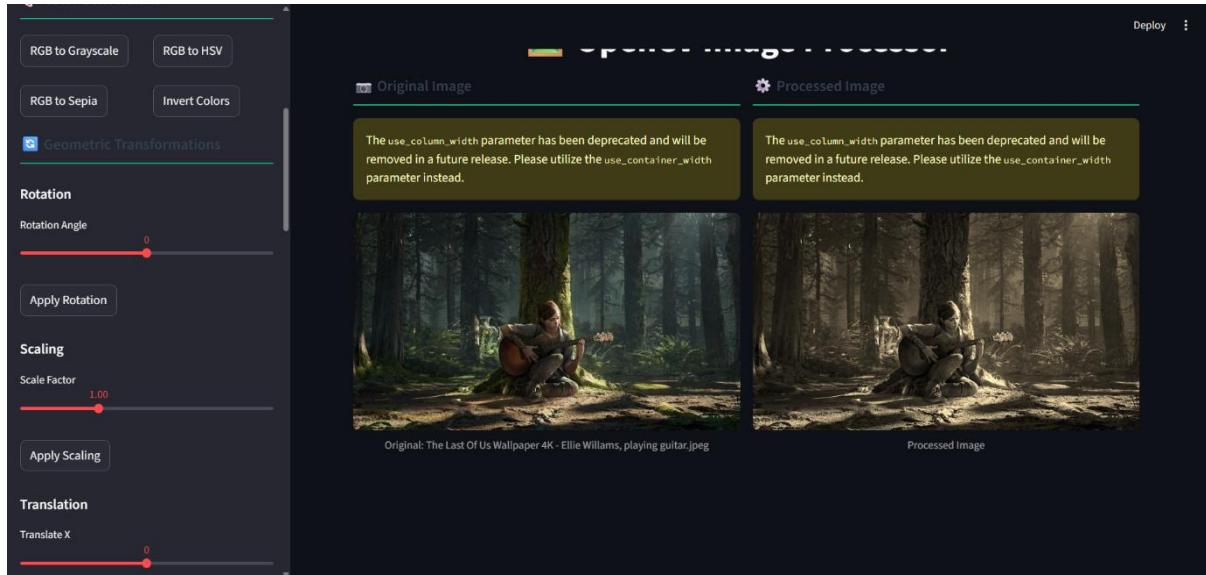
HOME -

The screenshot shows the main interface of the OpenCV Image Processor. On the left, there is a sidebar titled "Image Upload" with options to "Choose an image file", "Drag and drop file here" (with a 200MB limit for PNG, JPG, JPEG, BMP, TIF files), and a "Browse files" button. On the right, the main content area has a title "OpenCV Image Processor" with a sun icon. Below it is a message: "Please upload an image file to get started". A section titled "Available Operations:" lists several categories: "Color Conversions" (RGB to Grayscale, RGB to HSV, RGB to Sepia, Invert Colors), "Geometric Transformations" (Rotation, Scaling, Translation, Flip Horizontal/Vertical), "Filtering Operations" (Gaussian Blur, Sharpen, Emboss, Edge Detection), "Enhancement Operations" (Histogram Equalization, Contrast Stretch, Brightness, Gamma Correction), and "Edge Detection" (Sobel, Canny, Laplacian, Prewitt). Top right corner includes "Deploy" and three-dot menu buttons.

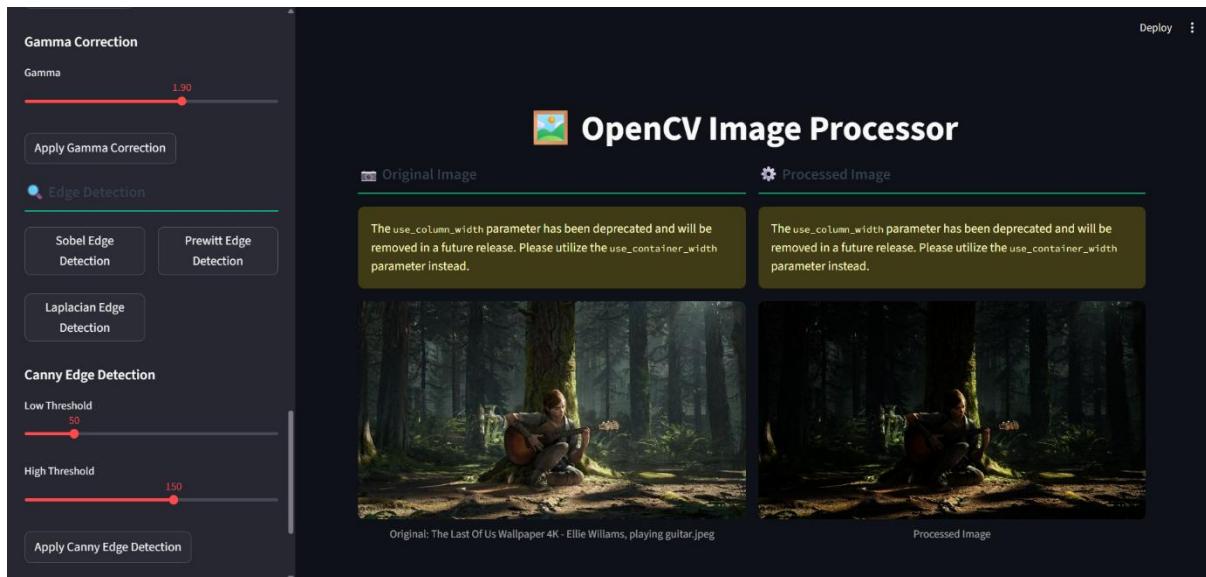
IMAGE INSERTION -

The screenshot shows the application after an image has been uploaded. The sidebar now displays the uploaded file: "The Last Of Us Wallpaper 4K - ... 61.1KB". Below this, a message says "Image loaded: The Last Of Us Wallpaper 4K - Ellie Williams, playing guitar.jpeg" and "Dimensions: 735 x 413 pixels". Under the "Color Conversions" section, buttons for "RGB to Grayscale", "RGB to HSV", "RGB to Sepia", and "Invert Colors" are visible. The main content area shows the uploaded image of Ellie Williams playing a guitar in a forest setting. To the right, there is a "Processed Image" section with a placeholder message: "Select an operation from the sidebar to see the processed result". A yellow warning box at the top of the main content area states: "The use_column_width parameter has been deprecated and will be removed in a future release. Please utilize the use_container_width parameter instead." Top right corner includes "Deploy" and three-dot menu buttons.

COLOR TRANSFORM (SEPIA) -



GAMMA -



EDGE DETECTION -

Edge Detection

Sobel Edge Detection Prewitt Edge Detection

Laplacian Edge Detection

Canny Edge Detection

Low Threshold: 50 High Threshold: 150

Apply Canny Edge Detection

Reset to Original Save Processed Image

Original Image Deploy :

The use_column_width parameter has been deprecated and will be removed in a future release. Please utilize the use_container_width parameter instead.

Processed Image

The use_column_width parameter has been deprecated and will be removed in a future release. Please utilize the use_container_width parameter instead.

Original: The Last Of Us Wallpaper 4K - Ellie Williams, playing guitar.jpeg Processed Image