BSOD.me

> "A simple image processing software."

Manual Version：**v0.1.1**
Software Version：**v1.2.6**
Coding Language：`JavaScript`
Coding Tool：`Webstorm 2023.1.1 (Student License)`
Version Control System：`Git`
Website Hosting Platform：`Github`
Website Security Provider：`Cloudflare`
Code Review Tools：`SonarCloud 、 DeepSource`
License：`Attribution-ShareAlike 4.0 International`
Third-party libraries, fonts, etc. used:

1. `exif-js` link
2. `tesseract.js` link
3. `tfjs` link
4. `ml5-js` link
5. `lit` link
6. `Victor Mono` link

Simple Processing

> These functions can be used to process images, modifying and enhancing their appearance and effects in various ways. You can select and apply these functions as needed to achieve the style and effect you want.

- **INVERSE**：*Reverses the colors of the image, making dark areas light and light areas dark.*
- **GRAYSCALE**：*Converts the image to black and white, removing color information.*
- **SEPIA**：*Adds a nostalgic effect to the image, giving it a vintage color tone.*
- **BINARY**：*Converts the image to a black and white binary format, categorizing pixels into black and white based on a set threshold.*
- **DITHER**：*Enhances the representation of the image's color and details using an illusion effect responsive to pixel values.*
- **FLOYD-STEINBERG**：*A type of dithering algorithm that improves the color smoothness and details of the image.*

- **HISTOGRAM EQUALIZATION**：*Enhances the contrast and visual effects of the image by redistributing its brightness values.*

Gamma/Noises

> These functions can be used to adjust gamma values in the image and add different types of noise. You can use the gamma adjustment function to adjust the brightness and contrast of the image for a better visual effect. The noise functions can add noise of different distributions to the image, making it appear more natural, interesting, or simulate special effects.

- **GAMMA ADJUSTMENT**：*Changes the brightness and contrast of the image for better visual effects by adjusting the gamma value.*
- **UNIFORM NOISE**：*Adds uniformly distributed noise to the image, making it appear more natural or interesting.*
- **GAUSSIAN NOISE**：*Adds Gaussian distributed noise to the image to simulate real-world random variations, useful for testing algorithms or enhancing visual effects.*
- **EXPONENTIAL NOISE**：*Adds exponentially distributed noise to the image for simulating certain special effects or adjusting the appearance of the image.*

Filters

> These filter functions can be applied to image processing, used to enhance, blur, detect edges, or add special effects. You can select and apply these functions as needed to achieve different image effects.

- **LAPLACIAN**：*Used to detect the edges and details in the image, making the contours of the image clearer.*
- **EXTENDED LAPLACIAN**：*Similar to the Laplacian filter, but enhances the edges and details in the image more intensively.*
- **BOX BLUR**：*Smoothens the image, blurring the details in the image, reducing noise and aliasing.*
- **GAUSSIAN BLUR**：*Blurs the image using the Gaussian function, achieving a smoothing effect while maintaining the natural appearance of the image.*
- **MEDIAN BLUR**：*Replaces each pixel value with the median value of its surrounding neighboring pixels, thereby eliminating noise and details.*
- **SHARPEN**：*Enhances the edges and details of the image, making it clearer and brighter.*
- **UNSHARP**：*Enhances the clarity and contrast of the image by combining sharpening and blurring.*

- **EMBOSS**：*Transforms the image to display the effect of raised or recessed textures, enhancing the three-dimensionality of the image.*
- **RELIEF**：*Similar to the embossing effect, it can create a three-dimensional effect by highlighting the details and textures in the image.*
- **Sobel Edge Detection**：*Detects the edges in the image to find the outlines and boundaries of objects in the image.*
- **Prewitt Edge Detection**：*Similar to Sobel edge detection, it is used to detect the edges and details in the image.*
- **Laplacian Edge Detection**：*Detects the edges and details in the image to highlight the contours of the image.*
- **Robert Edge Detection**：*Used to detect the edges and details in the image, and can find the outlines of objects in the image.*

File/Edit/View

> These functions are used for file operations, editing content, viewing screens, and related operations. You can use these functions to perform undo and redo operations, reset settings, save the current state or snapshot, load previously saved snapshots, download files, and switch to full screen mode or exit full screen mode.

- **UNDO**：*Reverses previous operations, returning to the previous state.*
- **REDO**：*Re-performs the previously undone operations.*
- **RESET**：*Restores the current settings or state to initial values or default values.*
- **SNAPSHOT**：*Captures the current screen or state for later viewing or use.*
- **LOAD SNAPSHOT**：*Loads a previously saved snapshot to restore a specific state or screen.*
- **DOWNLOAD**：*Downloads files or content to the local computer or device.*
- **CANVAS**：*Switches the application or content to full screen mode to make full use of the entire screen space.*
- **EXIT FULLSCREEN**：*Exits from full screen mode, returning to normal window mode.*

Extended

> These extended functions can be applied to more advanced image processing and operations. You can use these functions to crack CAPTCHAs, launch object detection, flip the direction of the image, apply fisheye effects, shift the focus of the image, or crop the shape of the image. These functions can bring more choices and changes to image processing and visual effects.

- **Captcha (filter+OCR)**：*Displays the CAPTCHA text detected using the filter and optical character recognition method.*

- **Captcha (Custom Model)**：*Displays the CAPTCHA text detected using the custom model method.*
- **CRACK CAPTCHA**：*Used for automatic recognition and cracking of CAPTCHA images.*
- **Flip/Sheer Direction**：*Selects the direction to flip or shear, which can be horizontal (Y-axis) or vertical (X-axis).*
- **Model Status**：*Displays information about whether the object detection model has been loaded.*
- **LAUNCH OBJECT DETECTION**：*Launches the object detection feature, which can identify objects in images or videos and classify or locate them.*
- **FLIP**：*Flips the image horizontally or vertically to change the direction or perspective effect of the image.*
- **FISH**：*Applies a fisheye distortion effect to the image, making the image show the extended and curved effect seen by a fisheye lens.*
- **PANNING**：*Performs panning operations in the image, that is, moving the image in a specific direction in the screen to change the visual focus or composition.*
- **SHEER**：*Performs shearing operations in the image, that is, a parallel shearing transformation of the image to change the shape or angle of the image.*

Parameters

> These parameters are used to enable options related to specific functions or modes. You can use these parameters to control whether to allow filter overlap, display the original image, enable focus mode (desktop version), and choose different processing methods applicable for school verification codes, including Filter + Optical Character Recognition (OCR) or the self-trained method. These parameters can be adjusted according to your needs and usage scenarios.

- **Allow Filter Overlap**：*Allows whether filters can overlap when multiple filters are applied.*
- **Show Original**：*whether to display the original image for comparison with the processed results.*
- **Focus Mode - Desktop**：*Enables the desktop version of focus mode, which can minimize distractions and provide a better user experience.*
- **School Captcha - Filter + OCR**：*Method of handling school verification codes, combining filter processing and Optical Character Recognition (OCR) technology.*
- **School Captcha - Self Train**：*Method of handling school verification codes, using a technique that involves 2710 labeled captcha images and a custom model architecture for training.*
- **Edge Detection Setup**：*Choose the method of setting up edge detection, it can be neon color (RGB), grayscale, or edge only.*

- **Object Detection Setup**：*Choose the display method for object detection, it can use the COCO-SSD or YOLO-Tiny model.*
- **EXIF Details**：*Displays EXIF details about the user-uploaded image.*

Customize Values

> These custom values are used to adjust different image processing effects. You can customize values such as hue, saturation, brightness, color balance, gamma, noise parameters, the intensity of whitening skin color, as well as perform image translation, scaling, and shearing transformations according to your needs. These values can be adjusted according to your needs and personal preferences to achieve the desired image effect.

- **HSI(Hue, Saturation, Intensity)**：*Adjusts the hue, saturation, and brightness values of the image.*
- **Color Balance (Cyan/Red, Magenta/Green, Yellow/Blue)**：*Adjusts the balance of cyan, red, magenta, green, yellow, and blue channels in the image.*
- **Gamma/Noise (Gamma, Ratio, Power)**：*Adjusts the gamma value, ratio, and power to adjust the brightness and contrast of the image and add a noise effect.*
- **Whiten Skin Tone (Intensity, Validate YCBCR, Show Skin Tone Areas, Whiten Skin Tone)**：*Adjusts the intensity of whitening skin tone, validates YCBCR, displays skin tone areas, and performs skin tone whitening.*
- **Transform (X, Y, Shear Angle)**：*Adjusts the X and Y coordinates of the image and the shear angle to perform image translation, scaling, and shearing transformations. That's all the features of our website*

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> We appreciate you taking the time to read the contents of the manual. Since we do not have a dedicated support team, we have provided the issue page on GitHub for you to submit questions and feedback. We sincerely hope to stay in touch with you this way and understand the problems and needs you encounter during use. If you encounter any questions, difficulties, or need further clarification when using our website, feel free to raise them at the link above. We will respond as soon as possible and provide corresponding help and answers. Your feedback is very important to us and will help us improve the functionality and user experience of the website. Thank you again for your attention and support of our website. We look forward to establishing a good communication channel with you and ensuring you have the best user experience during use.