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Part I About Software

1. With USB Video Class (UVC) protocol, data communication between the software and the scanner is allowed, including real-time reading of images and videos collected by the device and controlling the device to take pictures and adjusting image parameters.
2. The self-developed built-in algorithm module for image processing allows for curved page flattening and tilt adjustment based on laser lines. The software is also able to purify the background of a scanned document and allows for smart tilt adjustment, cropping, and finger recognition and clearing.
3. The software adopts self-developed algorithms for changing image color modes.
4. The software can generate PDF and TIFF files. With OCR function, it can convert image files into Word, PDF, Excel, TXT files for editing.
5. The functions of different devices are different, which are subject to the actual functions of the purchased device.

Part II Functions

2.1 Software Startup

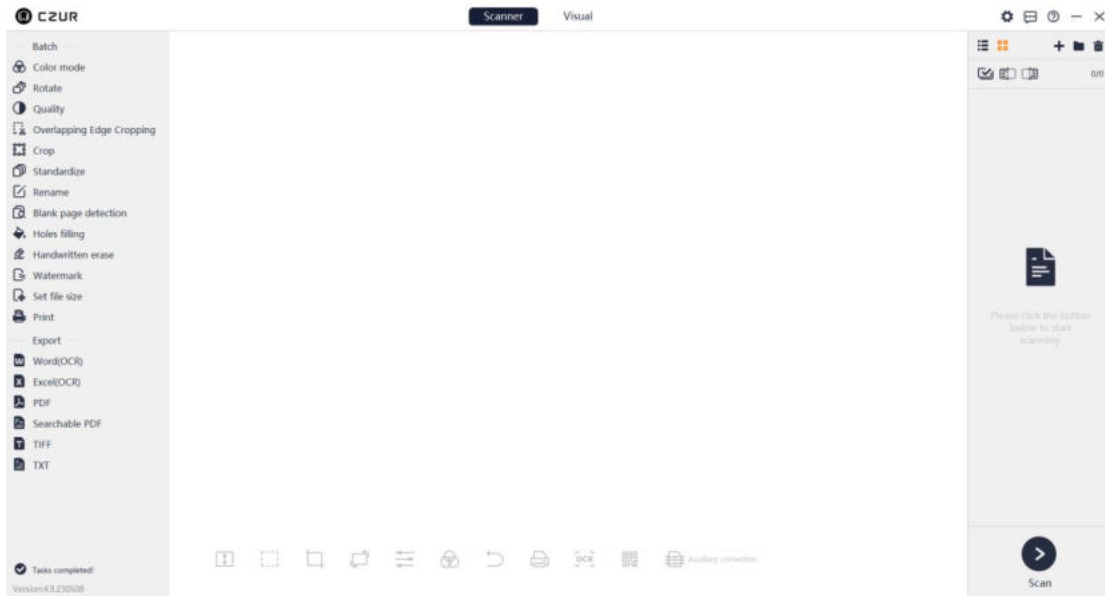
Run the software after installation and the startup window will pop up as shown below. Go to the main interface of scanner when the animation ends.



2.2 Scanner

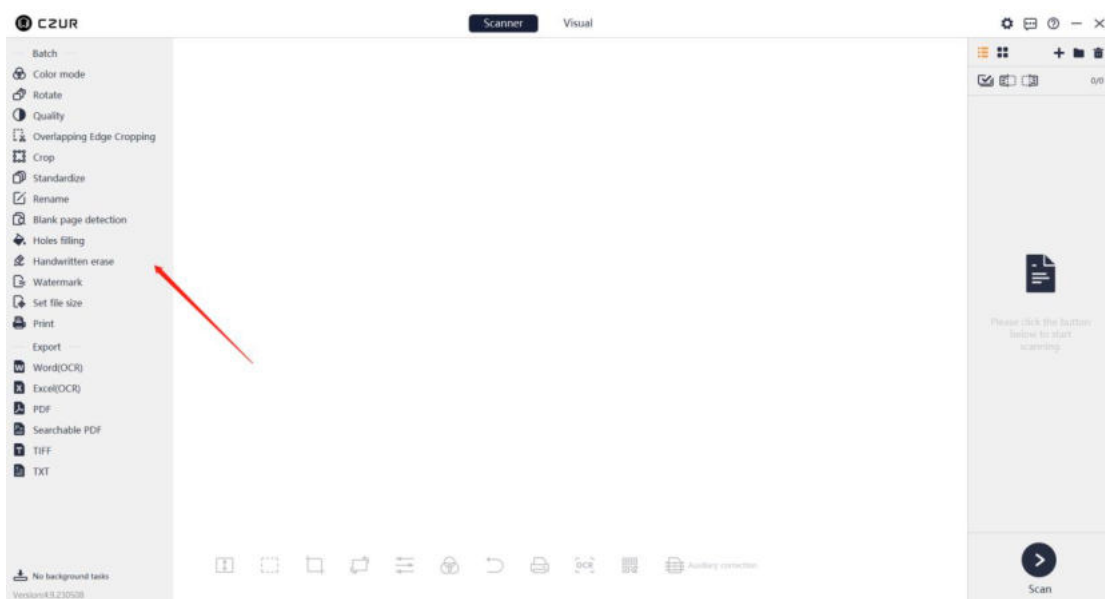
On the main interface of scanner, you can process scanned and imported

images. Available batch processing functions include **Color mode, Rotate, Quality, Overlapping Edge Cropping, Crop, Standardize, Rename, Blank page detection, Holes filling, Handwritten erase, Watermark, Set file size, and Print.** Options under **Print** include **Word (OCR), Excel (OCR), PDF, searchable PDF, TIFF, and TXT.** Desktop shortcut for software startup is available. Double-click the shortcut and loading animation will appear. The login page appears when the loading is completed, as shown below:



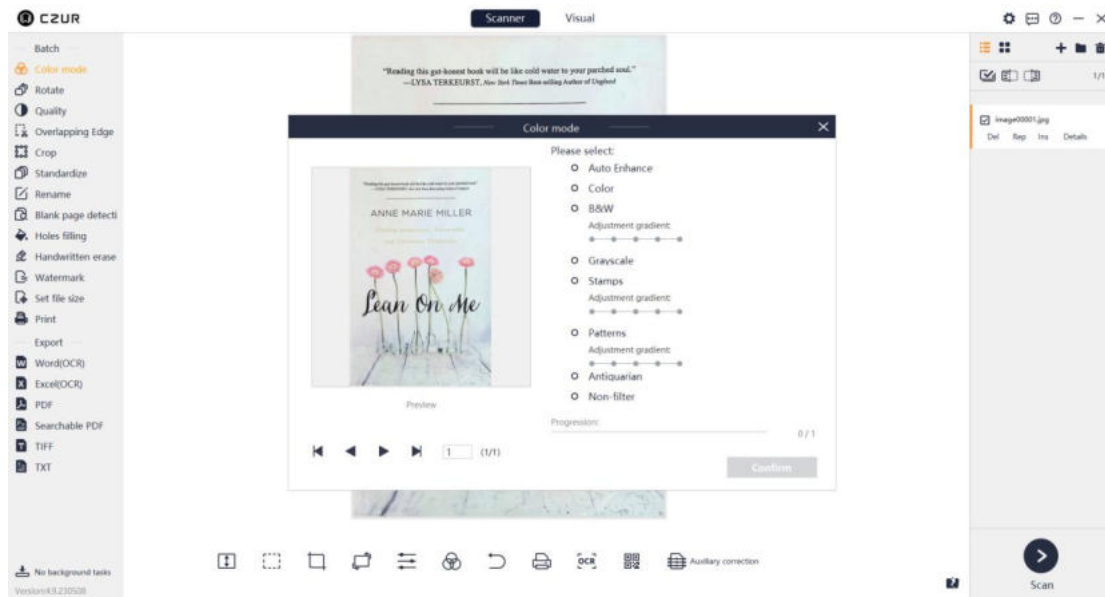
2.2.1 Batch

Batch: Batch processing functions include **Color mode, Rotate, Quality, Overlapping Edge Cropping, Crop, Standardize, Rename, Blank page detection, Holes filling, Handwritten erase, Watermark, Set file size, and Print.**



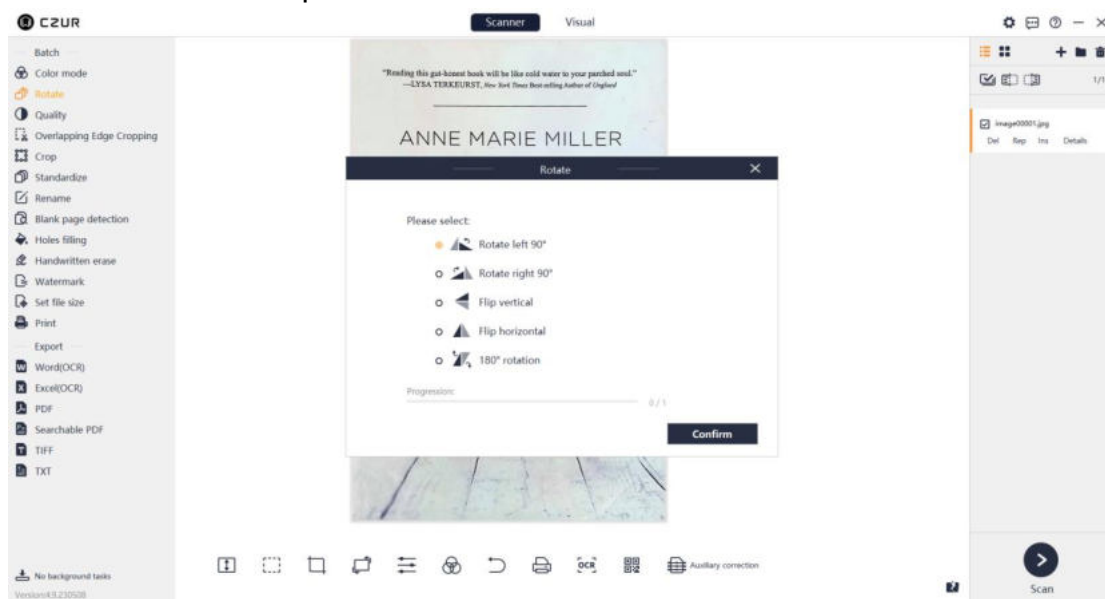
1. Color Mode

Click **Color mode** under **Batch** and select **Auto Enhance**, **Color**, **B&W**, **Grayscale**, **Stamps**, **Patterns**, **Antiquarian**, or **Non-filter** as needed. Click **Color mode**, and a new window will pop up as shown below:



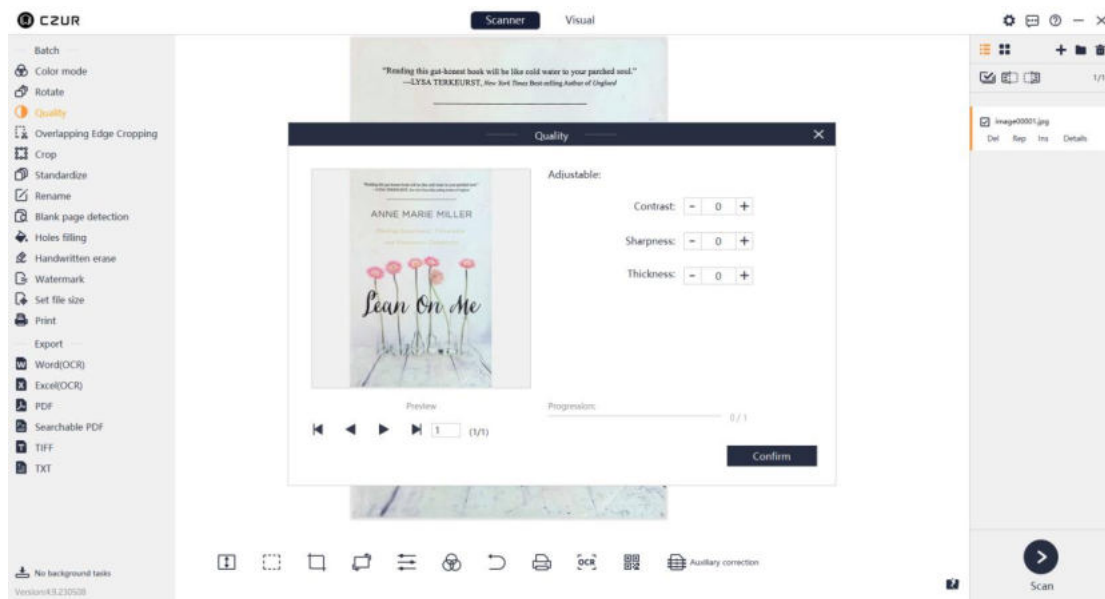
2. Rotate

Click **Rotate**, and a new window will pop up. The default selected option is **Rotate left 90°**. The selected images can be rotated in batch. The options include **Rotate left 90°**, **Rotate right 90°**, **Flip vertical**, **Flip horizontal**, and **180° rotation**. The operation of **Rotate left 90°** is shown below:



3. Quality

Click **Quality** and a new window will pop up. **Preview** is on the left, and adjustable items including **Contrast**, **Sharpness**, and **Thickness** are on the right, as shown below:



After processing, a pop-up window will appear, informing you that the batch quality setting is completed.

4. Overlapping Edge Cropping

Select a facing page image, click **Overlapping Edge Cropping** and a window will pop up. There are three processing options (**Crop overlapping edges by page width**, **Crop Hinge Line**, and **Clear upper and lower edges**). You may apply the functions to one image or multiple ones in batch.

Crop overlapping edges by page width: Page width is calculated from the hinge line to both sides, and the larger the values entered are, the less the page width is cropped.

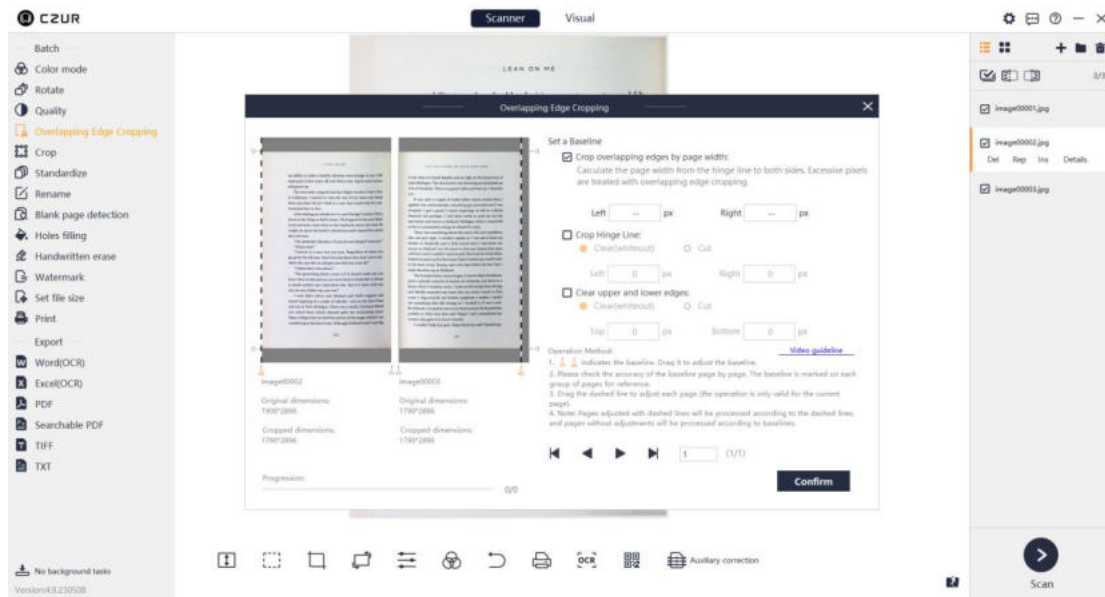
Crop Hinge Line: Adjust the hinge line edges. The larger the values entered are, the more the hinge part is cropped.

Clear upper and lower edges: Adjust the lines of the upper and lower edges. The larger the values entered are, the more the upper and lower edges are cropped.

Set a Baseline:

Dragging the baseline icon outside the preview image is valid for all selected images.

Dragging the baseline icon inside the preview image is valid for only the current selected image.



5. Crop

Click **Crop** and an operation window will pop up. Both single page and facing page images can be cropped.

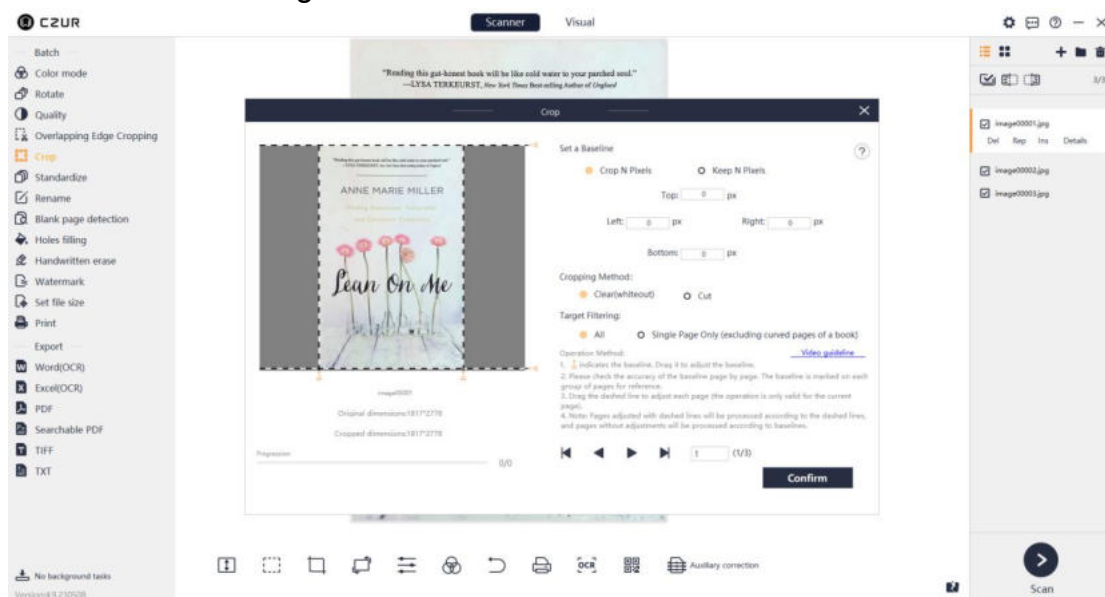
Crop N Pixels: The larger the values are, the more pixels will be cropped from the image (the top, bottom, left, and right edges will be cleared (whiteout), or cut).

Keep N Pixels: The larger the values are, the more pixels will be kept in the image (the top, bottom, left, and right edges will be cleared (whiteout), or cut).

Set a Baseline:

Dragging the baseline icon outside the preview image is valid for all selected images.

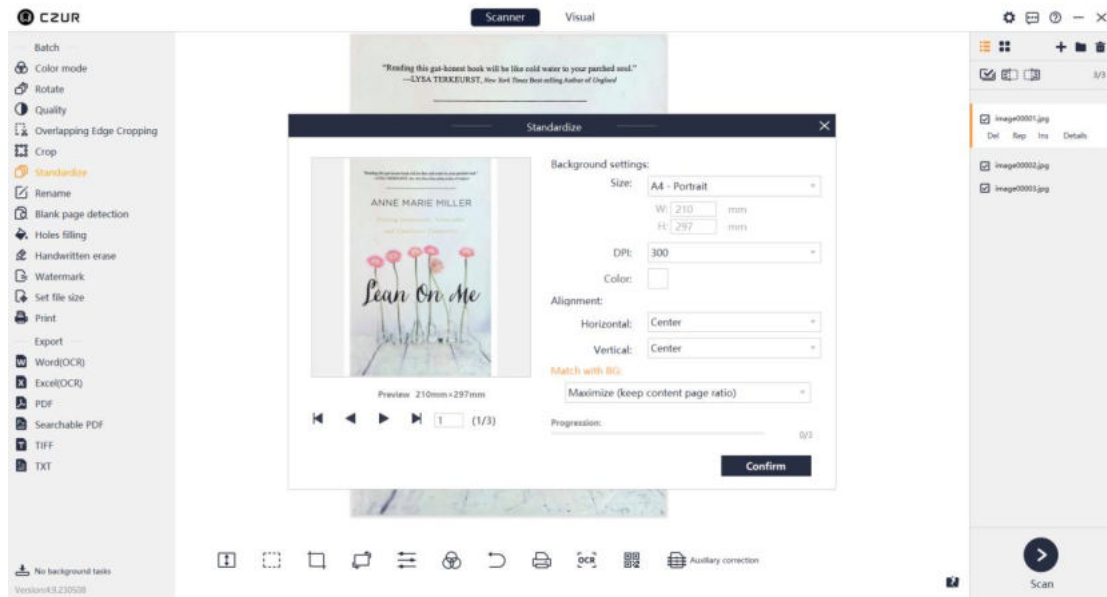
Dragging the baseline icon inside the preview image is valid for only the current selected image.



6. Standardize

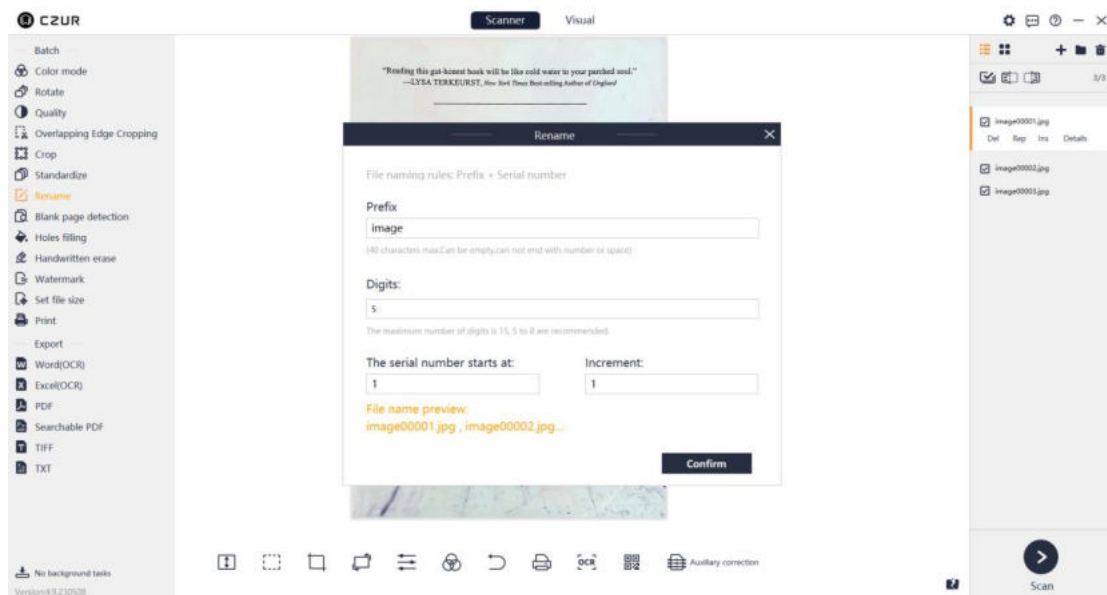
Click **Standardize**, and a new window will pop up. You can select options for **Background Settings (Size & Orientation, DPI, and Color)**, and **Alignment (Horizontal and Vertical)**. **Match with BG (Unchanged, Maximize, and**

Overspread) at the bottom is for adjusting the match relationship between the content page and background page. The interface is shown below:



7. Rename

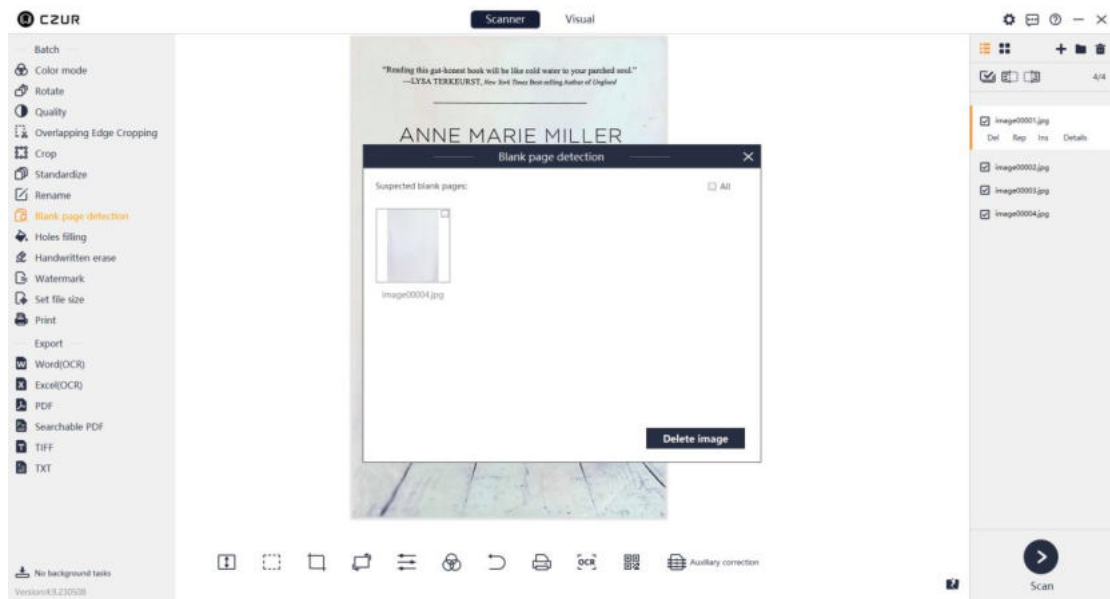
Rename: Click **Rename** to name selected image files by rules, and copy and save them to other folders.



8. Blank page detection

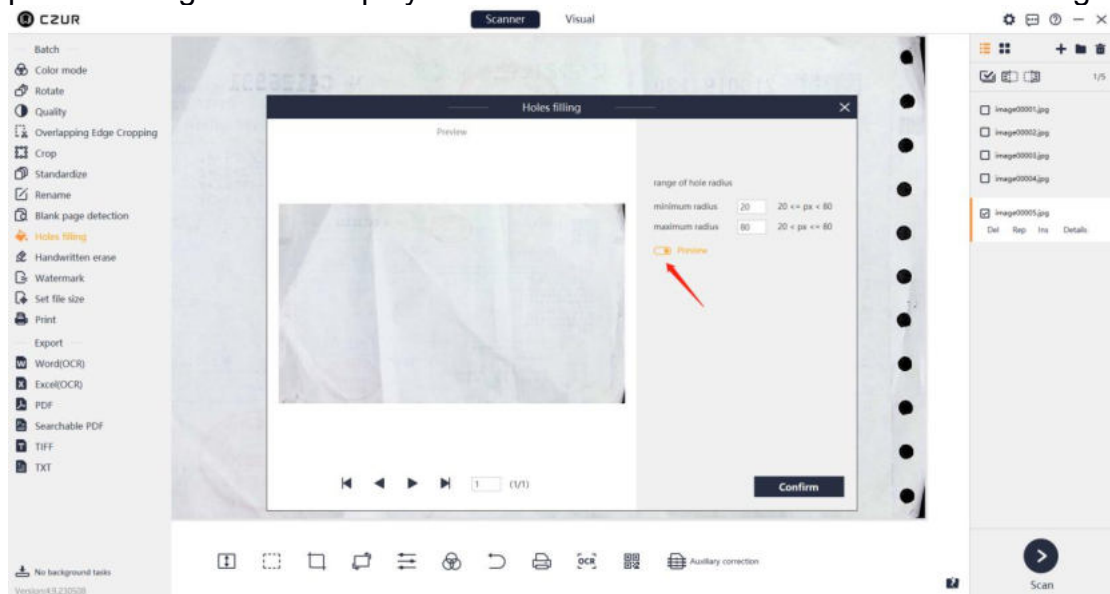
Blank page detection is to detect whether there are any blank pages in

selected images. Blank pages detected can be deleted as needed. As shown below, you may select and delete a suspected blank page.



9. Holes filling

The function is to fill the holes in an image. Set the range of the hole radius on the right. The minimum radius ($20 \leq px \leq 80$) is **20** by default; the maximum radius ($20 \leq px \leq 80$) is **80** by default. Enable **Preview** as indicated and the preview image will be displayed on the left. Click **Confirm** to save the settings.



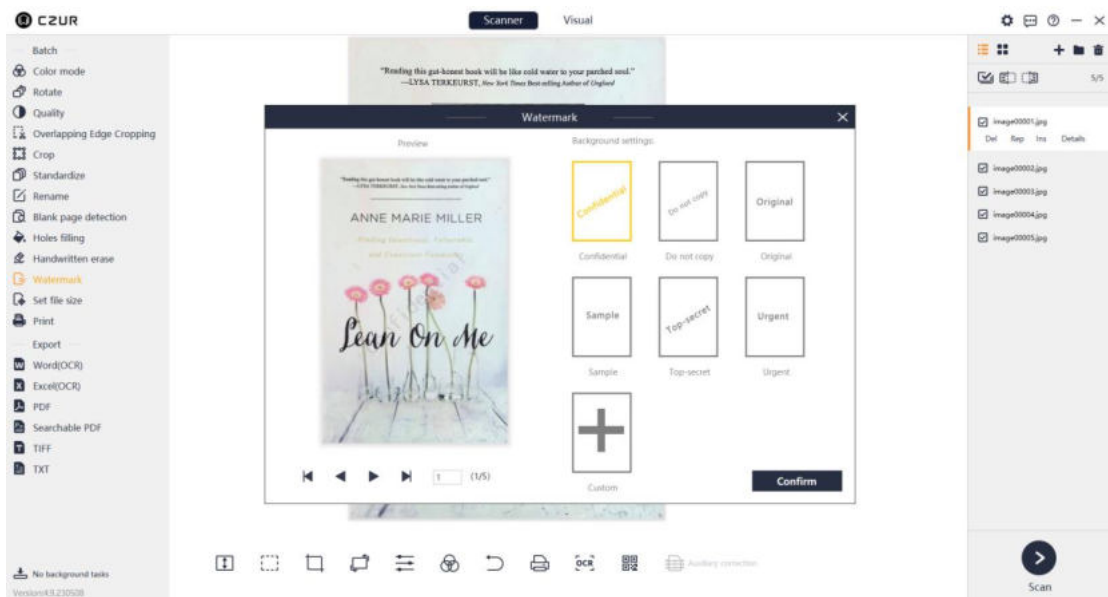
10. Handwritten erase

Handwritten text, answers, and tick marks on test papers can be erased automatically like being erased. You can tick **Background color purification** for more refined image processing, as shown below:



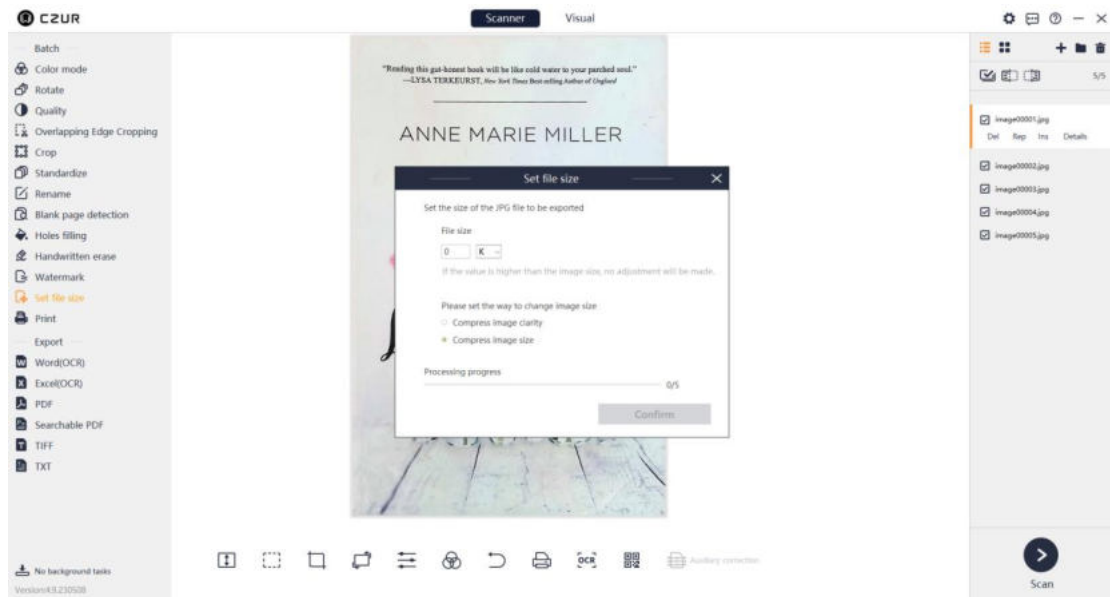
11. Watermark

Click **Watermark**, and a pop-up window will appear. The default watermark is **Confidential**. Click **Confirm** to apply watermarks or click **Custom** to go to the custom page to self-define text watermarks or image watermarks:



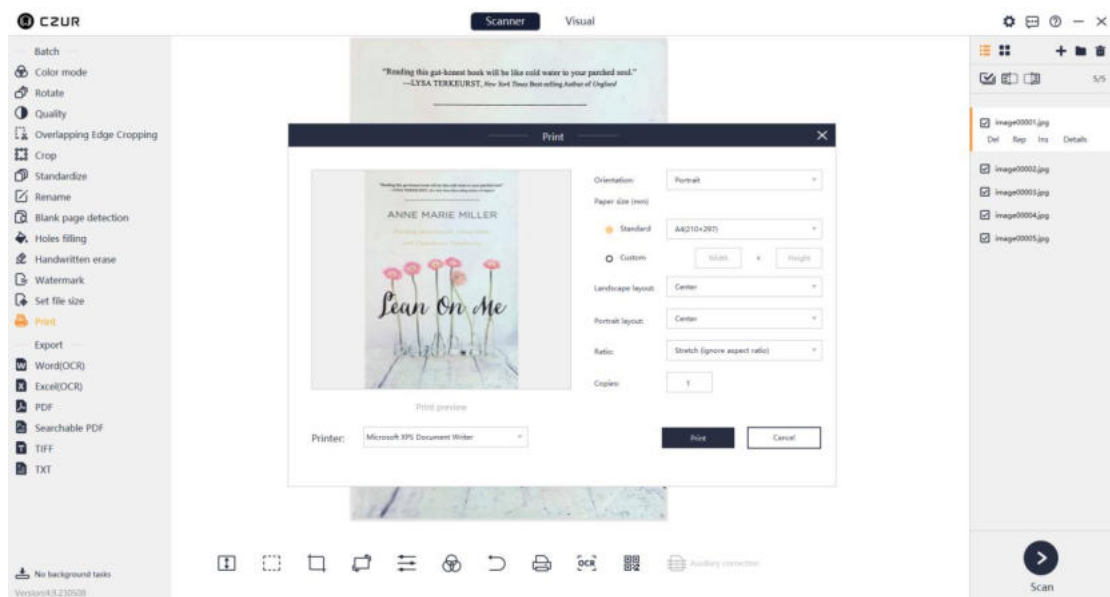
12. Set file size

Click **Set file size** and a pop-up window will appear. Set the file size by KB or MB by entering a value within an appropriate range, and then select **Compress image clarity** or **Compress image size** to adjust the quality and size of selected images.



13. Print

Click **Print** and a new window will pop up. **Print preview** is on the left and the adjustable items including **Paper size**, **Orientation**, **Landscape layout**, **Portrait layout**, **Ratio**, and **Copies** for printing are on the right, as shown below:

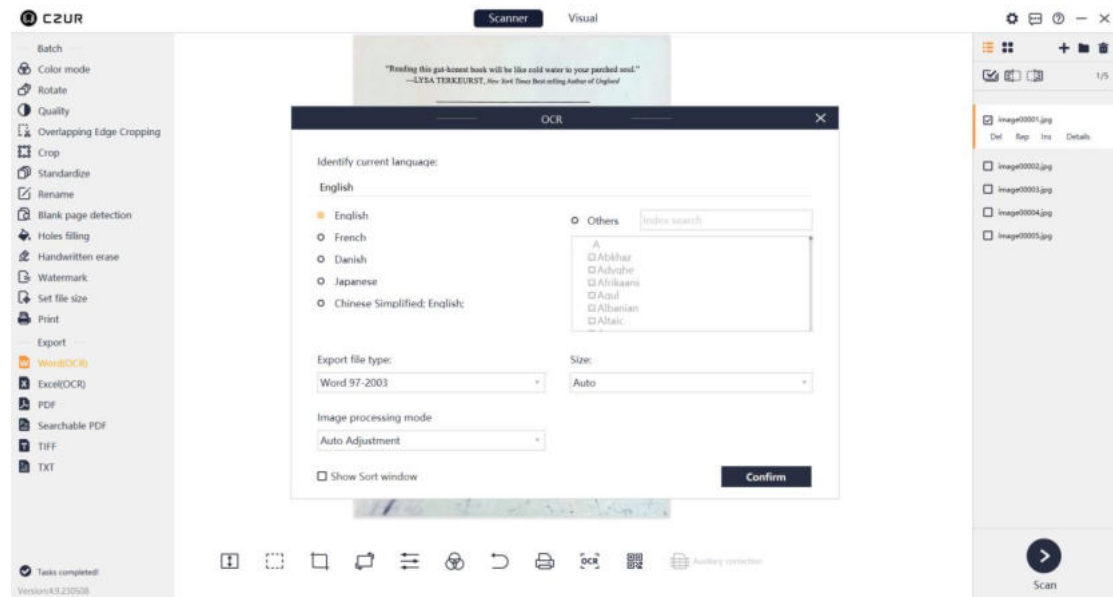


2.2.2 Export

1. Word (OCR)

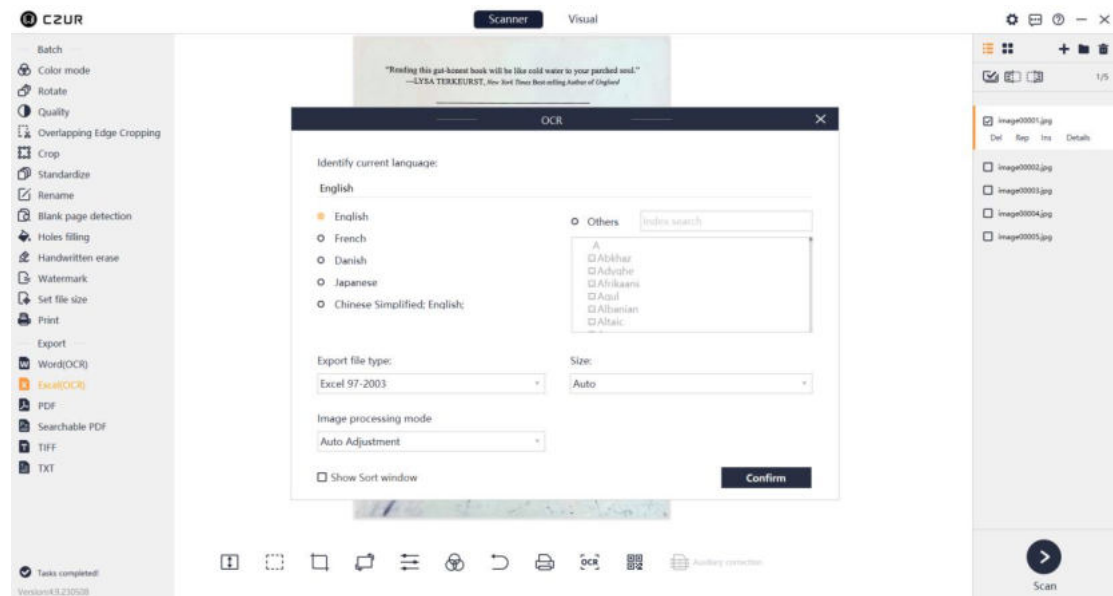
Word (OCR): The software can recognize the text on the image and save the text in a Word document. Back-end OCR is supported. Click **Word (OCR)**, and a new window will pop up. On the left side of the window, the language selected by default under **Identify current language** is the one selected during software installation. If you have manually selected another language, the last language you selected for OCR will be the current language for OCR

by default. You can select other languages on the right of the window. There is a drop-down list of page sizes at the bottom. Page size options include **Auto**, **A3**, **A4**, **A5**, **B3**, **B4**, and **B5**, as shown below:



2. Excel (OCR)

Excel (OCR): The software can recognize the text on the image and save the text in an Excel document. Back-end OCR is supported. The language selection process is the same as that in Word (OCR), as shown below:



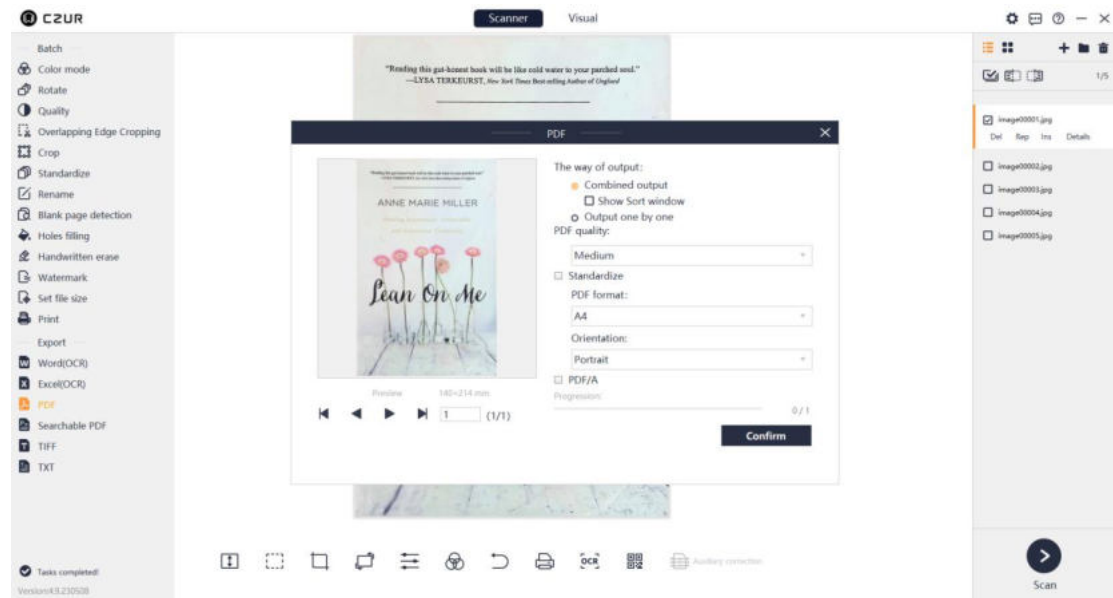
3. PDF

PDF: You can click **PDF** to convert selected images into PDF files quickly. There are two options under **The way of output**. **Combined output** is for

exporting all selected files in one PDF and **Output one by one** is for exporting the selected files into separate PDF files one by one.

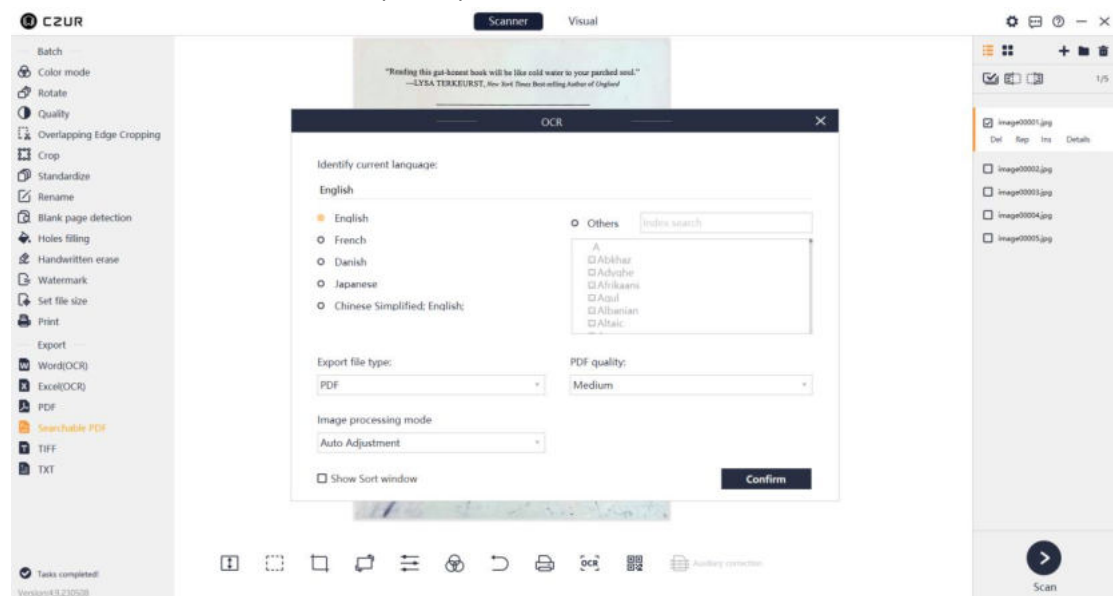
There are three PDF quality options (**High, Medium, and Low**). You can self-define the options.

You can select the default size or a standardized size for the PDF. Standardized size options include **A3, A4, A5, B3, B4, B5, Portrait, and Landscape**, as shown below:



4. Searchable PDF

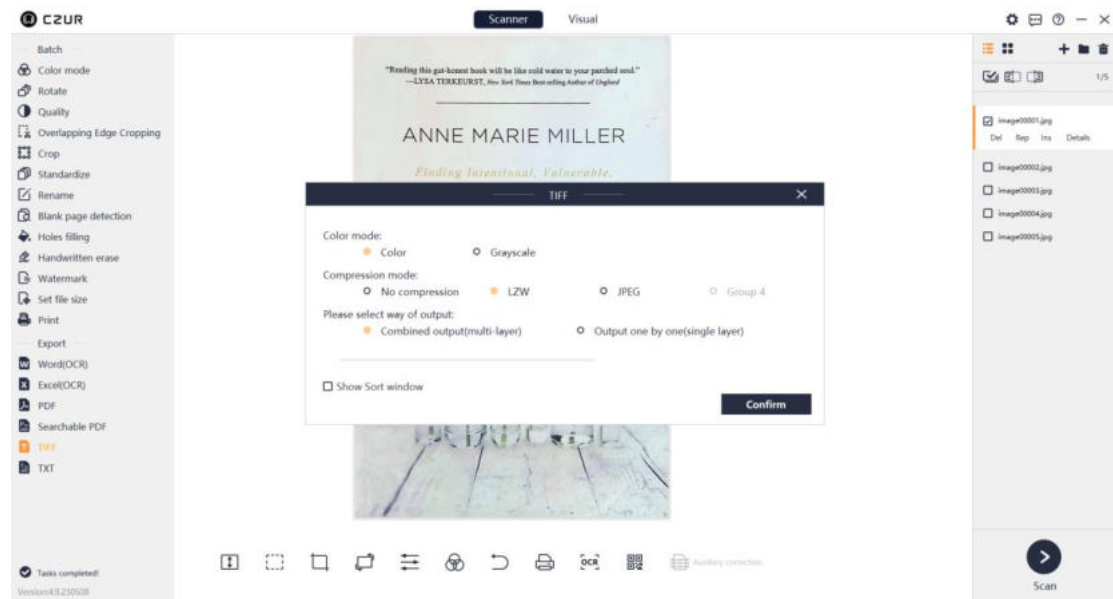
Word (OCR): The software can recognize the text on the image and save the text in a PDF. Back-end OCR is supported. The language selection process is the same as that in Word (OCR):



5. TIFF

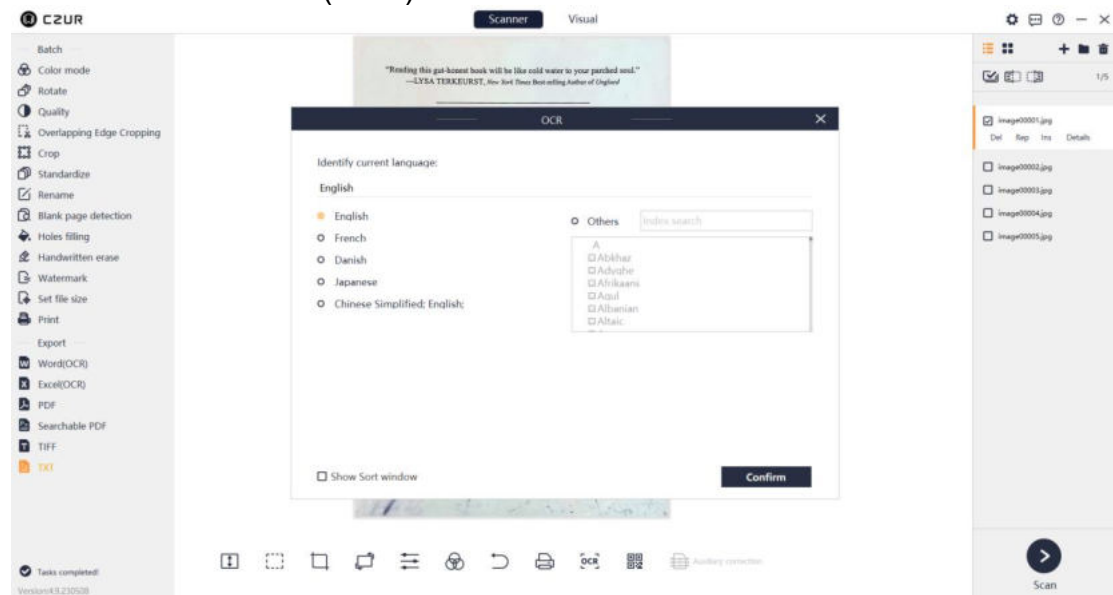
TIFF: You can click **TIFF** to convert selected images into TIFF files. The color modes supported include **Color** and **Grayscale**. The compression modes supported include **No compression, LZW, JPEG, and Group 4**. The way of output includes **Combined output** and **Output one by one**. After selecting the

above parameters, click **Confirm**, and select save path and file name to complete the export of TIFF files.



6. TXT

The software can recognize the text on the image and save the text in a txt document. Back-end OCR is supported. The language selection process is the same as that in Word (OCR) as shown below:



2.2.3 Edit Bar

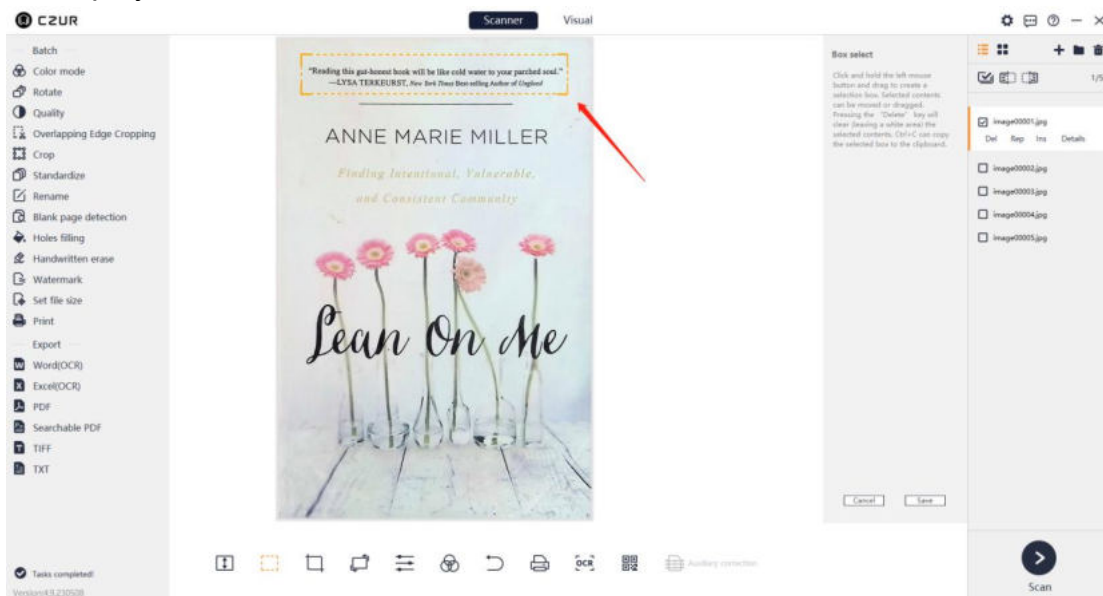
1. Display

Click the Fit Height icon to switch between different display modes:



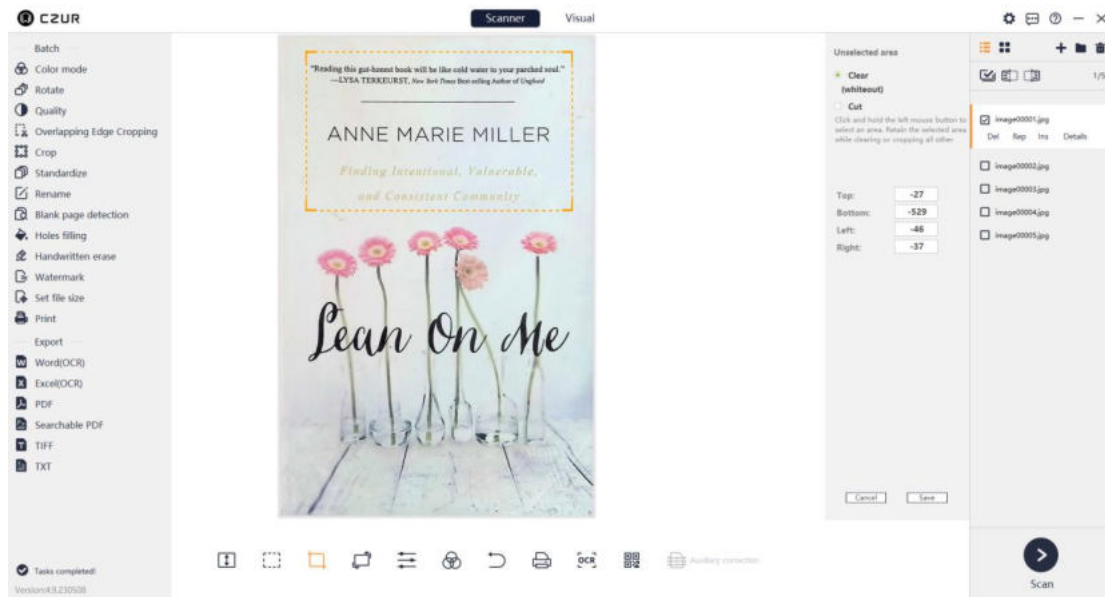
2. Manual Select

As instructed, you can drag the mouse to select an area of the image and then drag the area or press Ctrl+C to copy the area to the clipboard. Drag the selected area and the original area will be left blank. Press the Delete key to clear (whiteout) the selected area. Click **Save** and the manual select result will be displayed on the main interface.



3. Crop

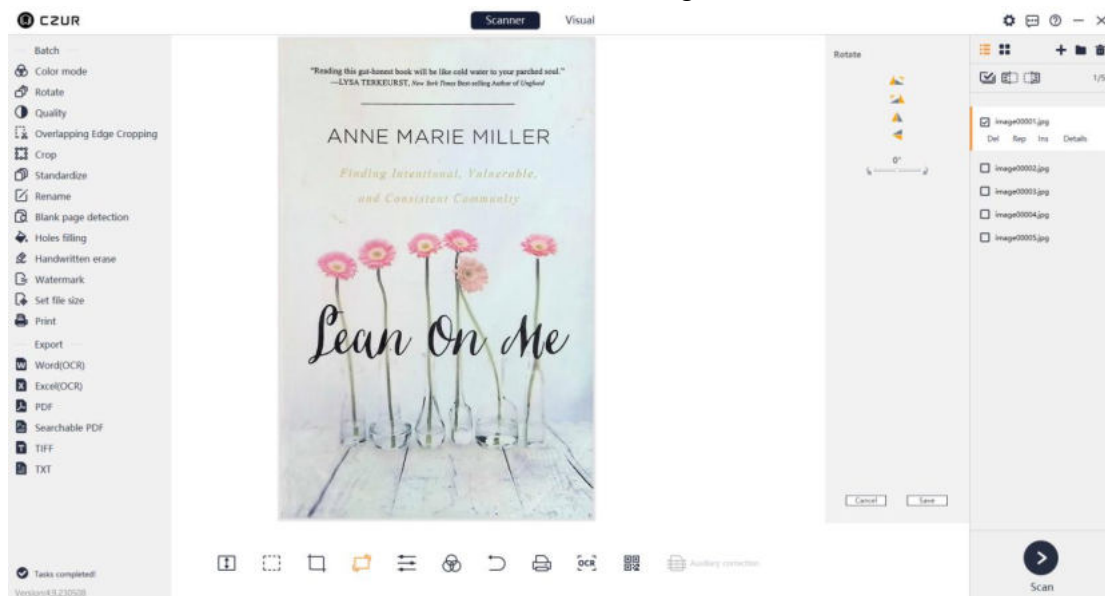
The Crop options on the edit bar include **Clear (whiteout)** and **Cut**. Click and hold the left button of the mouse to select an area. The default Crop option is **Clear (whiteout)** as shown below:



Clear (whiteout) means that the original page size is unchanged except for the selected area, and the background of the unselected area becomes white. **Cut** means that only the selected area is retained, while the unselected area is completely deleted.

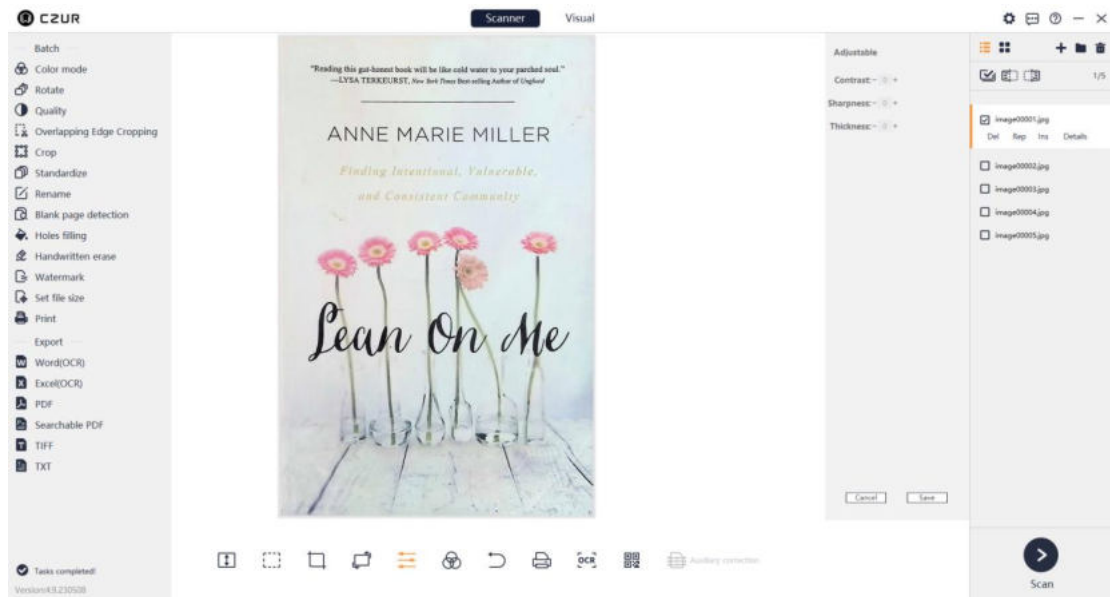
4. Rotate

For the Rotate icon on the edit bar, the rotate options on the right include **Rotate left 90°**, **Rotate right 90°**, **Flip horizontal**, **Flip vertical**, and **180° Rotation**; the maximum customized rotation angle is $\pm 15^\circ$, as shown below:



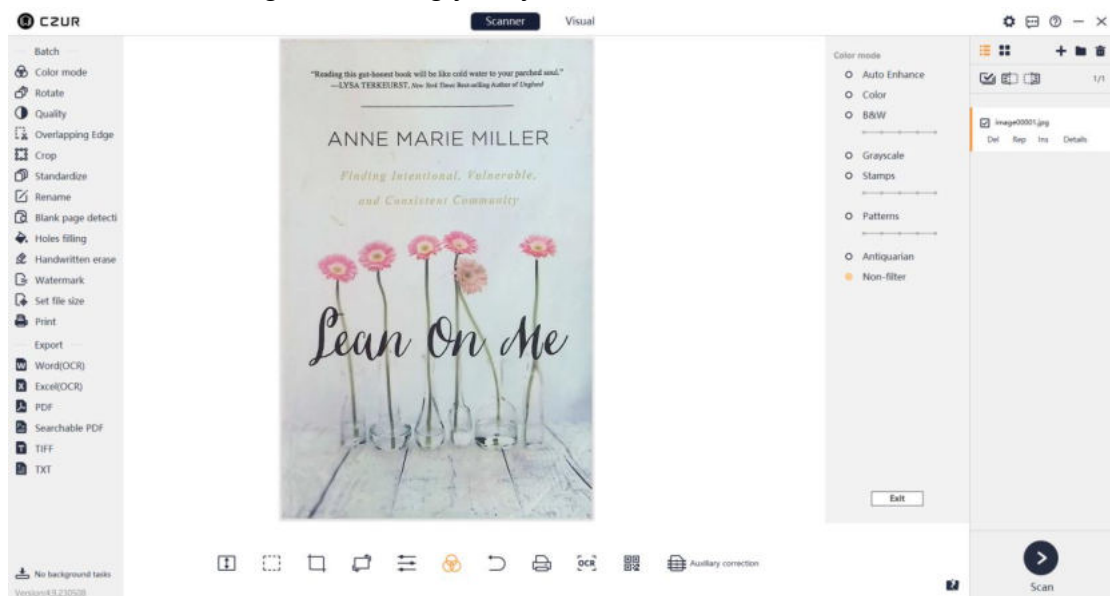
5. Quality

For the Quality icon on the edit bar, the quality options on the right include **Contrast**, **Sharpness**, and **Thickness**, and they can be adjusted in a range of ± 5 . The image preview on the left will change accordingly as you adjust the values, as shown below:



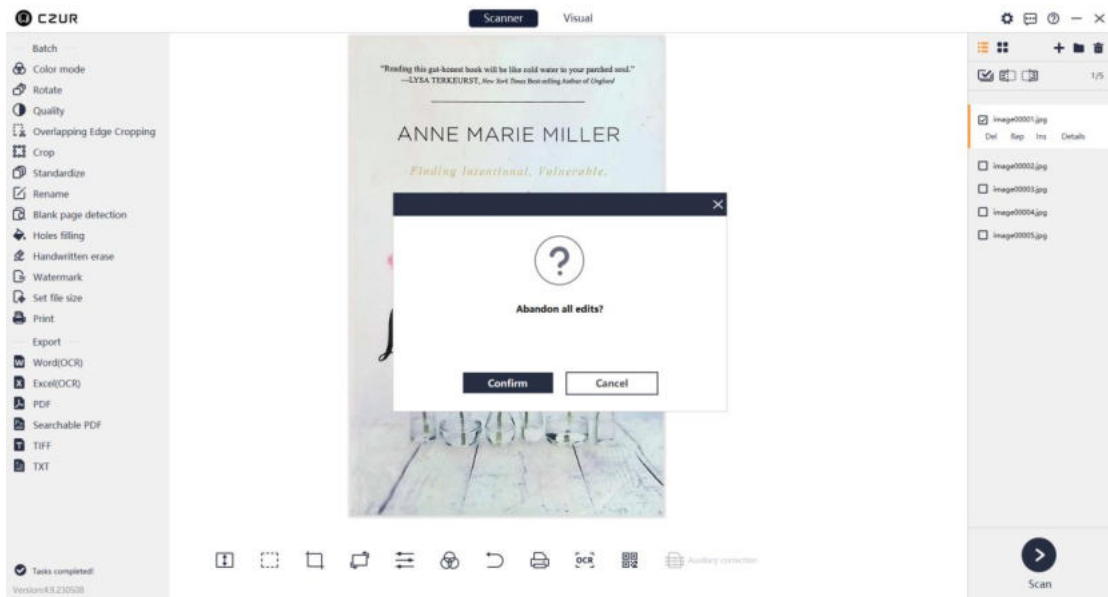
6. Color mode

Color modes on the edit bar include **Auto Enhance**, **Color**, **B&W**, **Grayscale**, **Stamps**, **Patterns**, **Antiquarian**, and **Non-filter**. The image in the main interface will change accordingly as you select a color mode, as shown below:



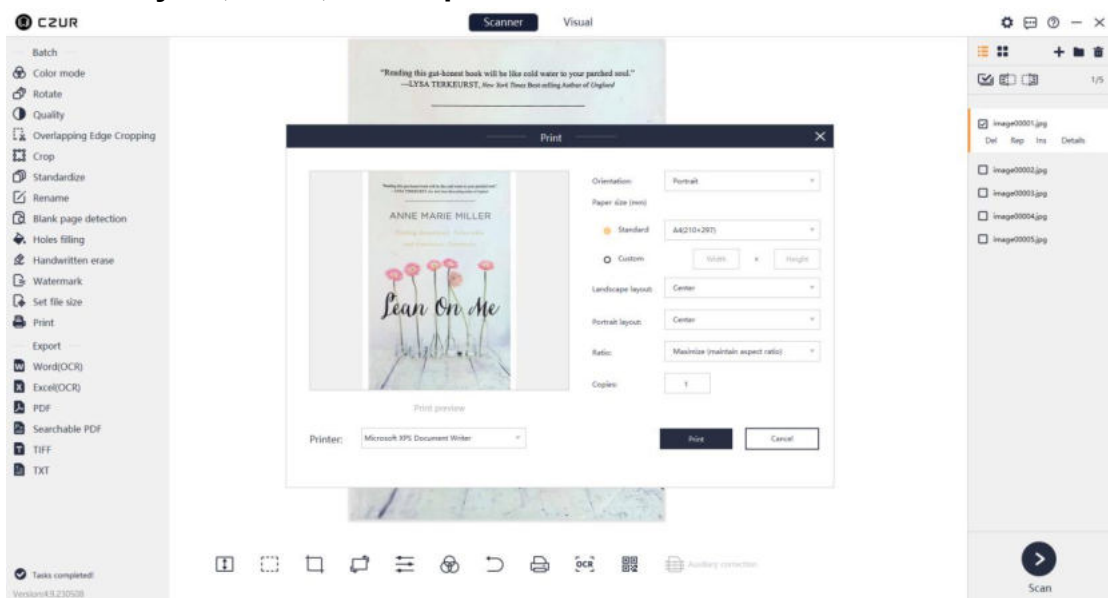
7. Undo

The Undo page is shown below:



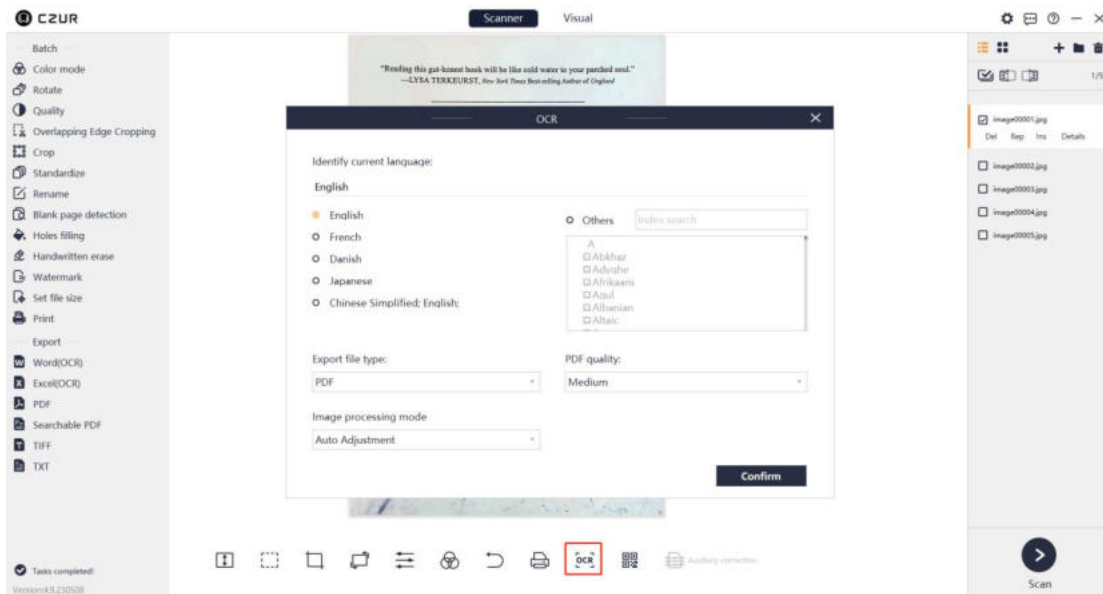
8. Print

Click the Print icon on the edit bar and a new window will pop up for batch printing of images. **Print preview** is on the left and the adjustable items are listed on the right, including **Paper size, Orientation, Landscape layout, Portrait layout, Ratio, and Copies**, as shown below.



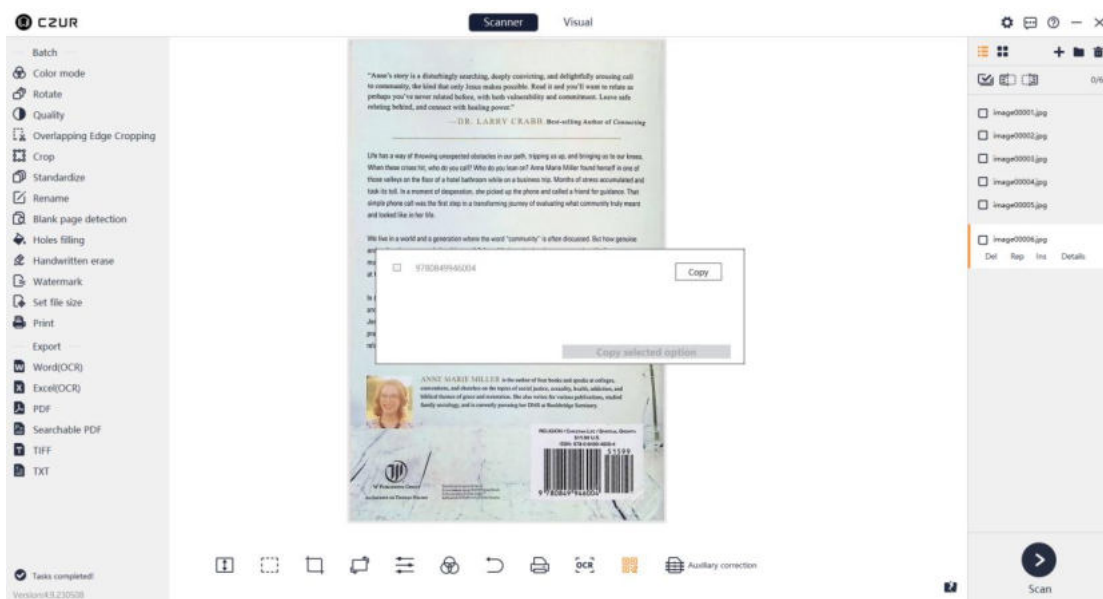
9. OCR

The OCR icon on the edit bar is for one-key OCR, which is valid for only the current file but invalid for batch processing. You can select a size from the drop-down list at the bottom. The size options include **Auto, A3, A4, A5, B3, B4, and B5** (only valid for Word files). Click **Confirm** and select a save path to generate a PDF, Word, or Excel file. The interface is shown below:



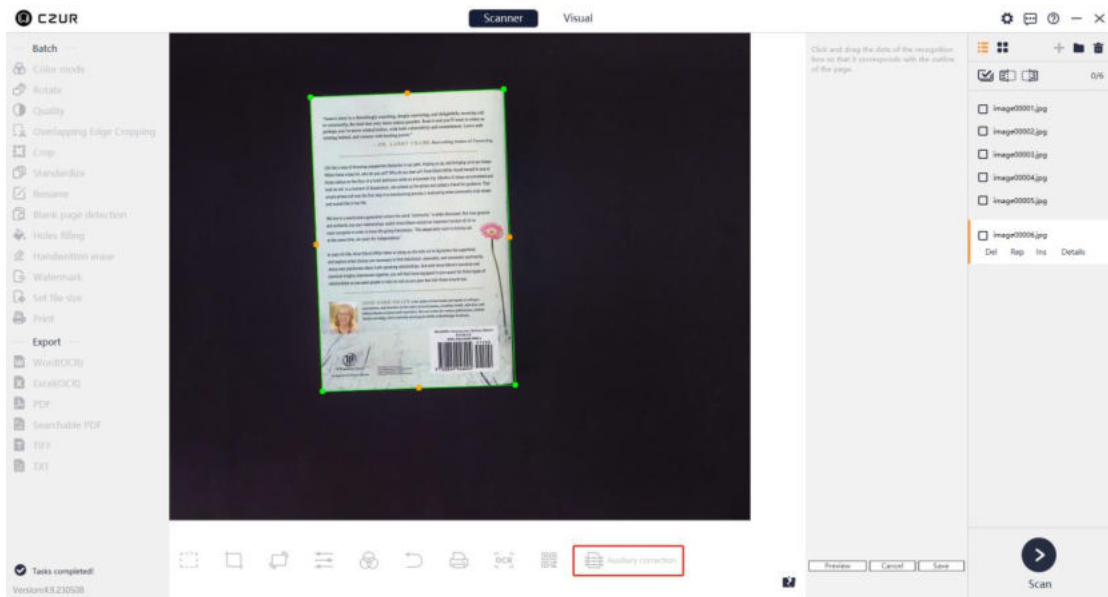
10. QR Code/Barcode

The function is to recognize ISBNs and QR codes on books or documents, and it is allowed to copy and paste the results to the clipboard.



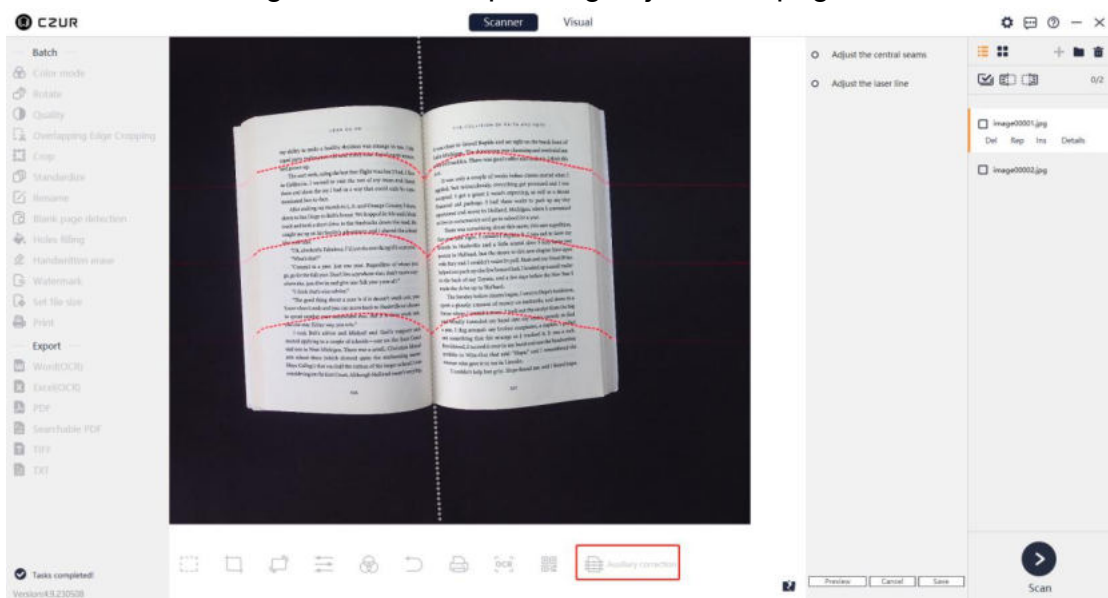
11. Auxiliary Correction

The function is valid for images under the **[Flat Single Page]** and **[Facing Pages]** modes. For the current image under the **[Flat Single Page]** mode, click the Auxiliary Correction icon to go to the adjustment page:



You can drag the dots on the borders to adjust the cropped position and preview the result. Click **Preview** and a pop-up window will appear, showing the result. You can also cancel or save the result.

For the current preview under the **[Facing Pages]** mode, click the Auxiliary Correction icon to go to the corresponding adjustment page:



You can select **Adjust the central seam** or **Adjust the laser line** as indicated on the right of the window.

2.2.4 File List

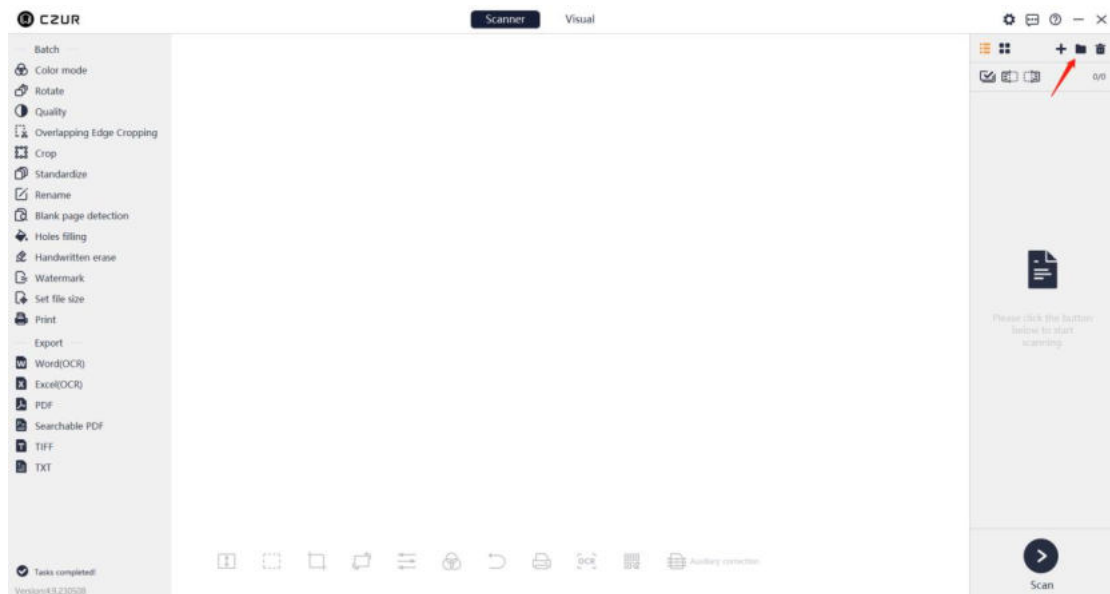
1. Import File

Click the "+" icon in the upper right corner of the main interface to import files. JPG images can be imported.



2. Open Containing Folder

As indicated by the mark in the upper right corner of the main interface, click the folder icon to the right of "+" to view the file location.



Click the folder icon and the directory of the current image or video file will be opened.

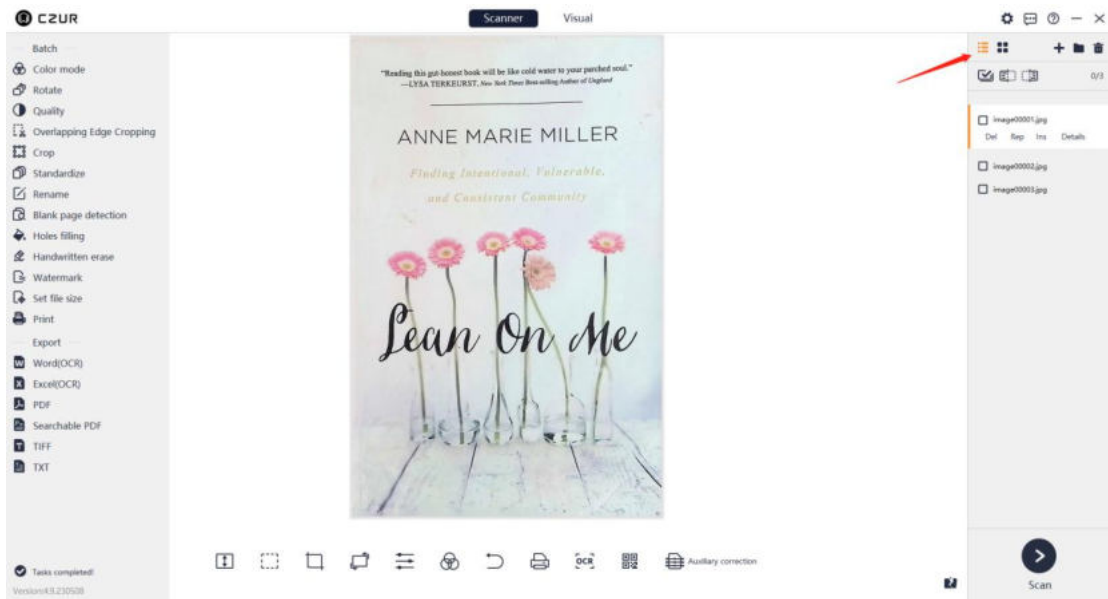
3. Select All

Click the Select All icon above the file list on the right to select all the files on the list. Click the icon again to deselect all the files, as shown below:



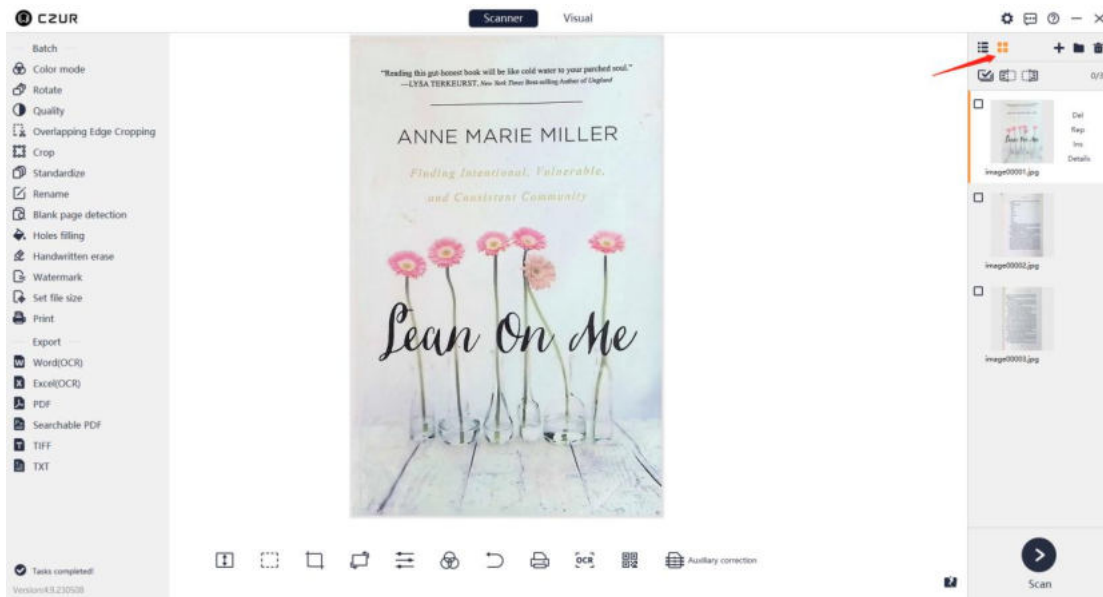
4. List Mode

Click the List Mode icon and the files will be displayed by name, as shown below:



5. Thumbnail Mode

Click the Thumbnail Mode icon and the files will be displayed by thumbnail, as shown below:



6. Delete, Reproduce, Insert and Details

Delete (Del), **Reproduce (Rep)**, **Insert (Ins)**, and **Details** are the functions available for the current image file on the file list in both Thumbnail Mode and List Mode.

Delete is to delete and put a file into the recycle bin or remove a file from the list, which is only valid for the current image but invalid for batch processing.

Reproduce is to rescan the current image and the new one will replace the one to be rescanned.

Insert is to insert a new scanned image before the current image.

Click **Details** to view the width, height, modification time, and file size of the current image.

2.3 Scan

Click the Scan icon in the lower right corner to go to the scan interface, as shown below:



1. Color mode: Select a color mode for the object to be scanned.

Auto Enhance: In this mode, colors are enhanced and more vivid and the black and white are more distinct.

Color: In this mode, color information is retained to the greatest extent and there is no special enhancement. This mode is suitable for paper with more colors.

Patterns: In this mode, watermarks and background patterns are retained to the greatest extent, and paper colors are enhanced. This mode is suitable for documents with watermarks and background patterns.

Stamps: In this mode, the background color of the paper is turned into pure white and the stamp colors are enhanced. This mode is suitable for paper with white background and stamps.

Grayscale: In this mode, all colors on paper are turned into gray, that is, grayscale is applied to retain more information, and storage space needed is minimized appropriately.

B&W: In this mode, the colors of the paper are turned into black and white to reduce the storage space needed. This mode is suitable for paper with black characters on white background.

Antiquarian: In this mode, antiquarian colors are retained without any enhancement. This mode is suitable for ancient book scanning.

Picture: In this mode, the colors are reproduced greatly and there is less noise. This mode is suitable for picture scanning.

Non-filter: In this mode, the colors of images are neither processed nor enhanced.

2. Processing method: Select a proper paper processing method.

[Flat Single Page]: This allows for auto cropping and smart tilt adjustment. For ID scanning, you may go to Settings to enable Rounded Cornered Blank in advance.

[Facing Pages]: This allows for auto flattening, finger cot removal, tilt adjustment, and edge cropping of paper. You may go to Settings to select a finger removal method (**With finger cot** or **Without finger cot**) and select which page comes first under this option.

Combine Sides: This allows for combining the front and back sides of a document into one page horizontally or vertically. You may go to Settings to enable Rounded Cornered Blank in advance.

Manual Selection: You can select an area with the mouse in the preview interface, and save the selected area only.

No Processing: With this method, the original image will be kept and remain unprocessed.

3. Auto Scan

Enable **Auto Scan**, and the software will scan automatically when detecting a page-turning operation.



4. Photo Button

When a device is connected, click the Photo button to scan an image.



5. When a device is connected, you may adjust the image exposure manually or enable auto exposure.



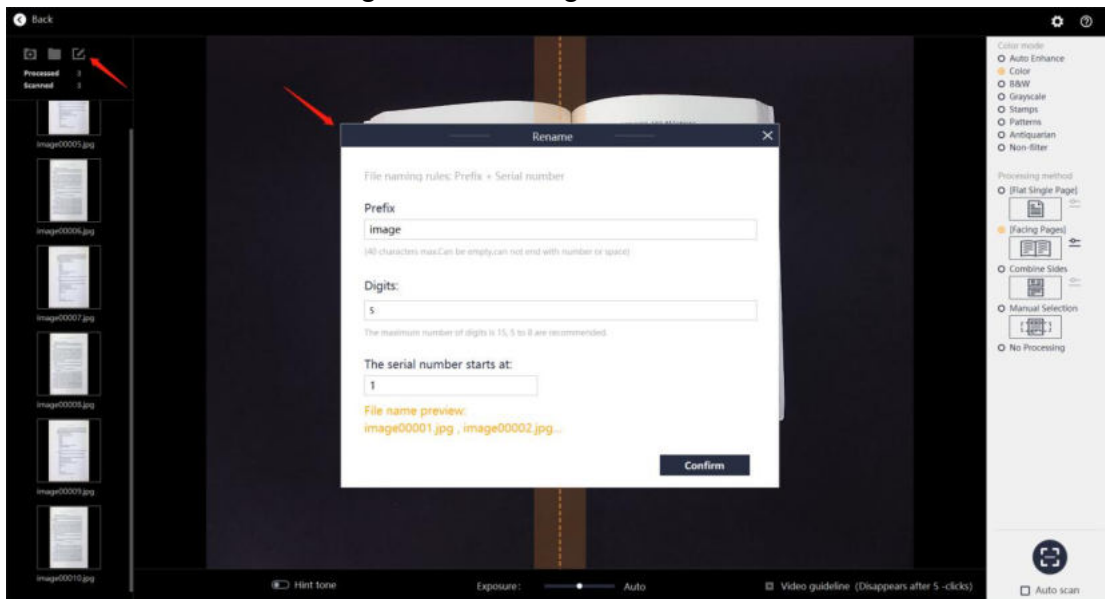
6. The numbers of scanned images and processed images are displayed on the left. Scanned images and processed images are displayed in real-time. Double-click a processed image to open it.



7. You can set the save path of scanned images and open the containing folder of images.



8. You can set the naming rules for images and rename them in advance.

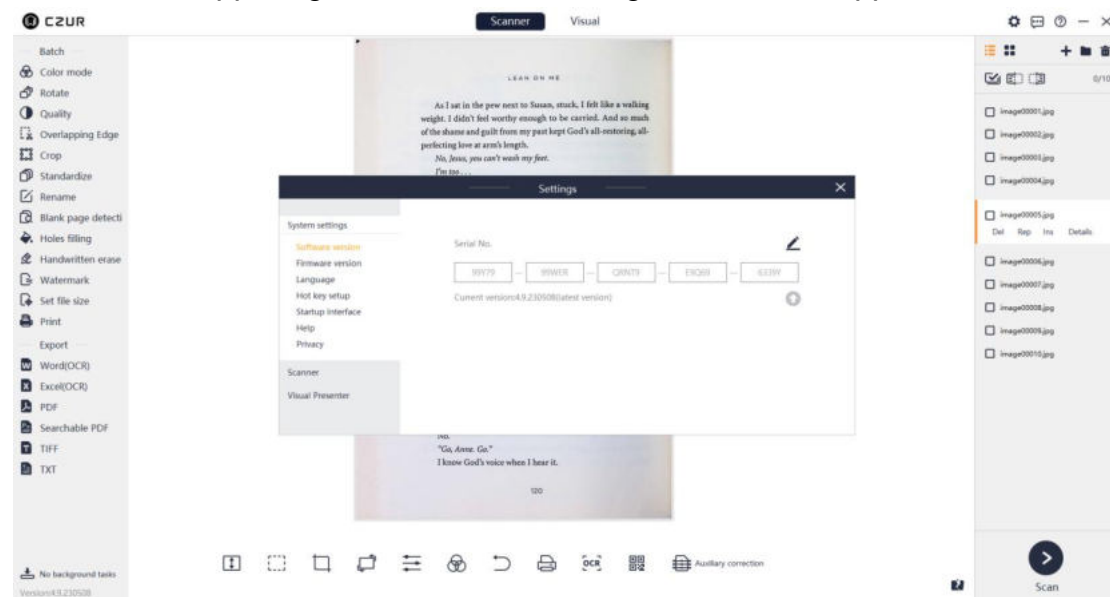


2.4 Settings

System settings and **Scanner settings** are available.

2.4.1 System Settings

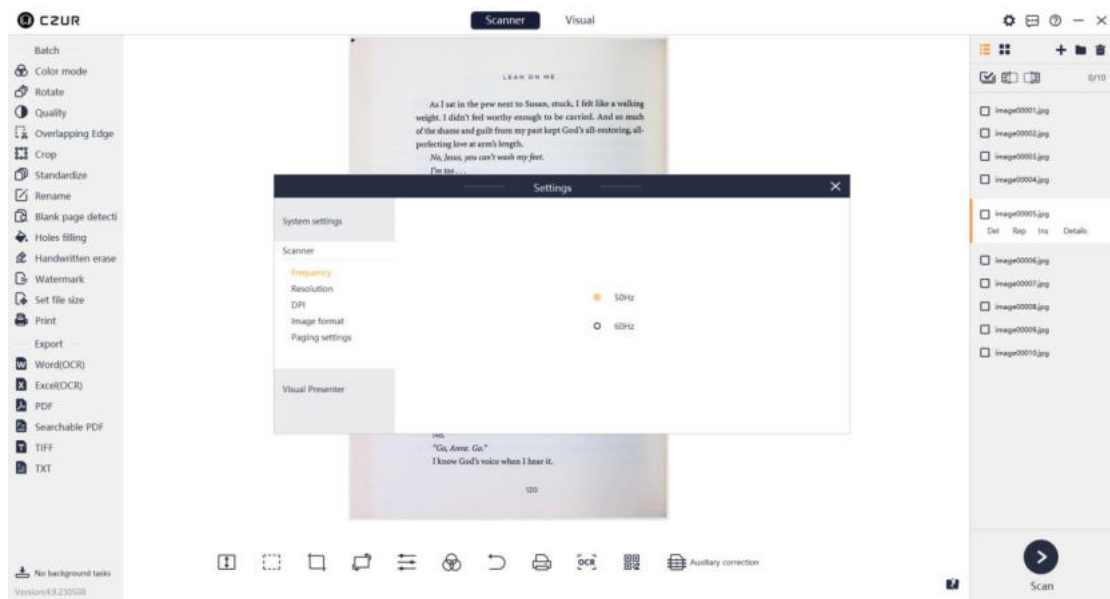
Run the software, go to the main interface of the scanner, click the settings button in the upper right corner and a settings window will appear as follows:



1. Serial No.: Click the change icon and then enter and save a serial number to restart the software.
2. Software version: Click **Software version** to view the current version.
3. Firmware version: Click **Firmware version** to view the firmware version of the current device.
4. Language: Click **Language** to switch among languages.
5. Hot key setup: Press "Alt + number key" to set hotkeys.

2.4.2 Scanner Settings

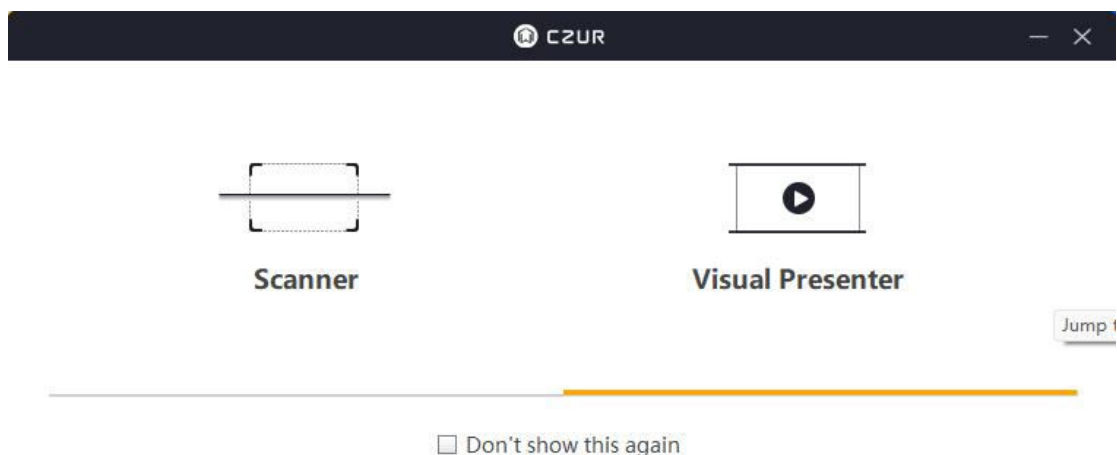
Click **Scanner** to go to the following window:



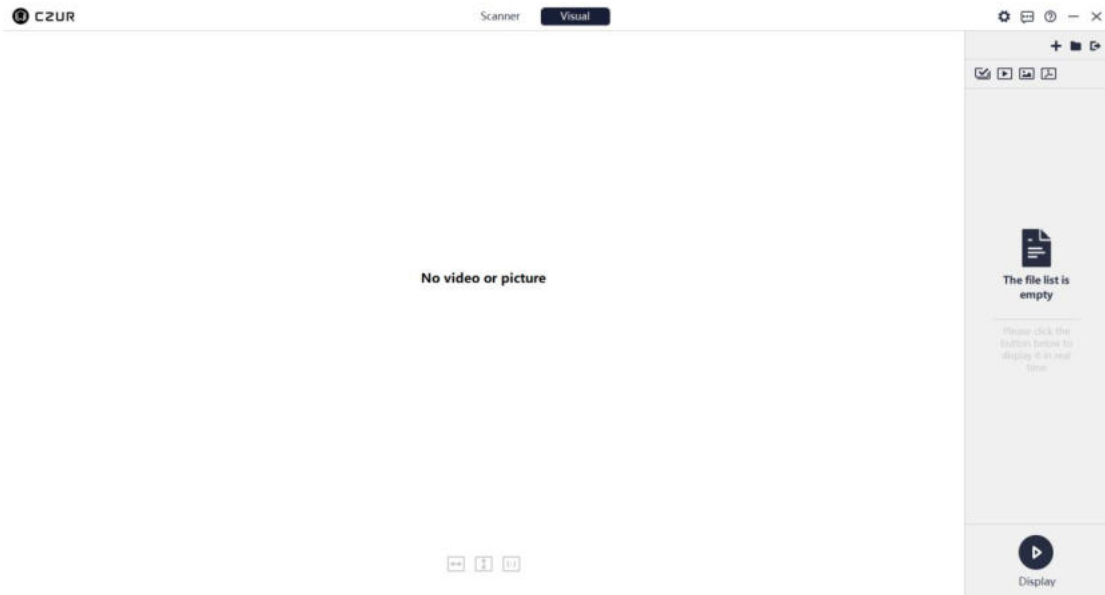
1. Frequency: 50Hz and 60Hz are available.
2. Resolution: The default resolution of the device, common resolutions lower than the default one, and self-defined resolutions are allowed.
3. DPI: The default DPI of the current device is displayed. Available DPI options include 96dpi, 320dpi (default), 350dpi. The range of self-defined DPI is $72 \leq \text{self-defined value} \leq 1000$.
4. Image format: jpg format is supported. Image quality options include **Low**, **Medium**, and **Best**.
5. Paging settings: Auto paging settings are available for facing page scanning. You can select which page comes first under this option.

2.5 Visual Presenter

2.5.1 Visual Presenter

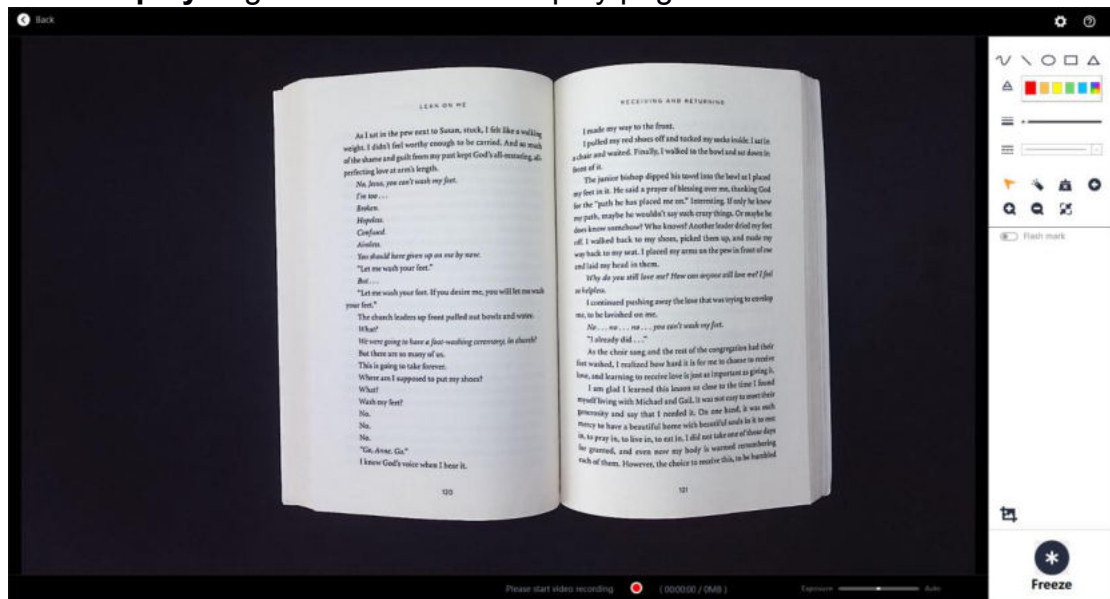


When the data and startup items are loaded, click **Visual Presenter** to go to its main interface, as shown below:

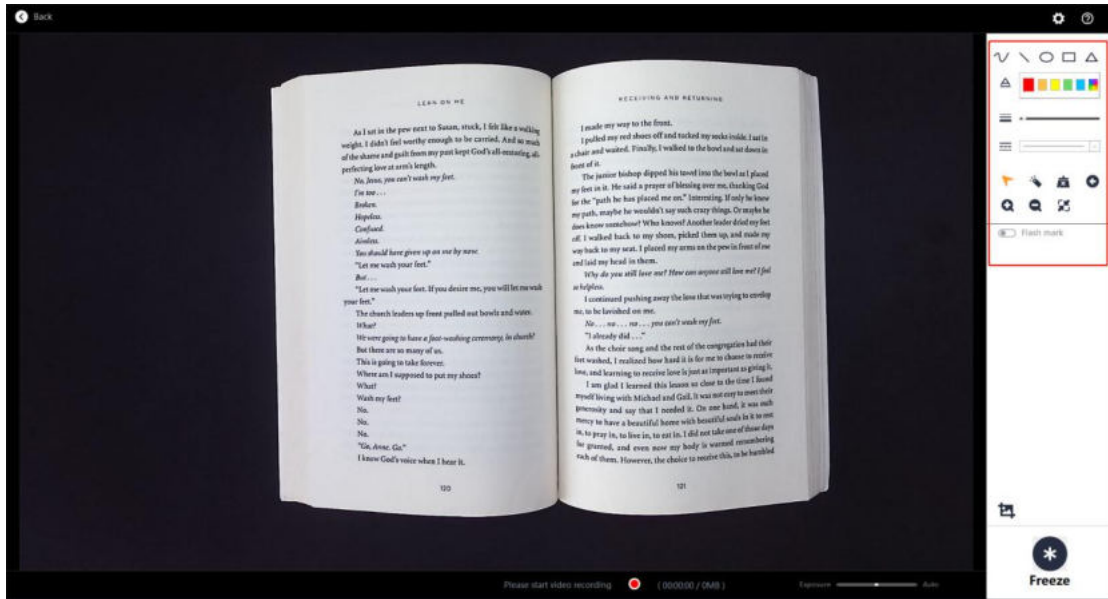


2.5.2 Display

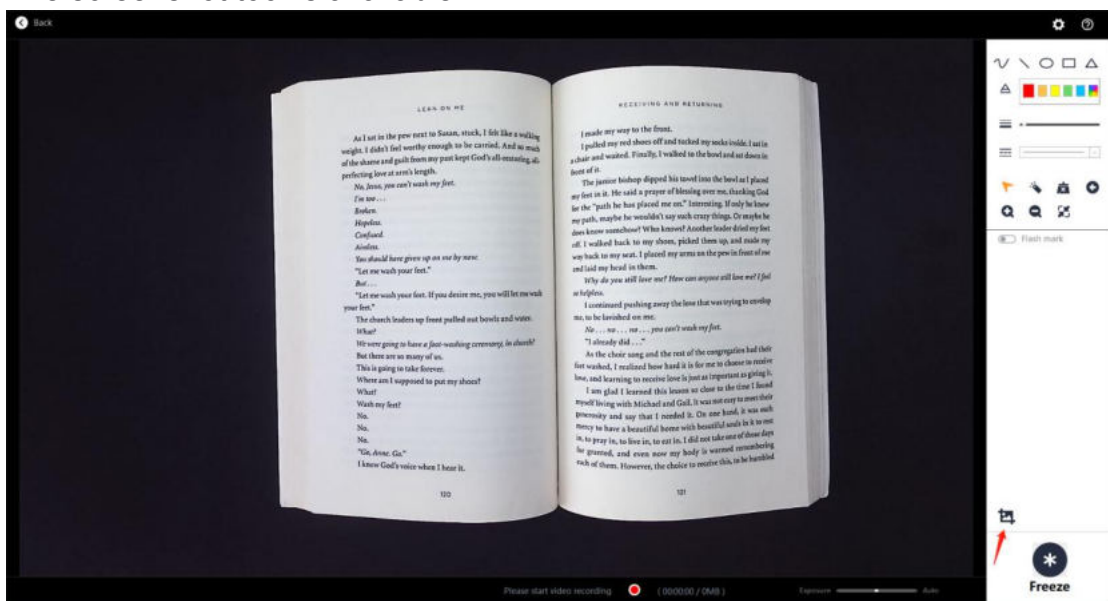
Click **Display** to go to the real-time display page.



Tools like real-time markup, brush, rectangle tool, and text tool are available.



The screenshot tool is available.



Video recording function is available.

