

Image2 Calculator Manual (Ver. 1.0)

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Introduction

There is a thing to want to execute a calculation between images. This software performs as a calculator which can apply four arithmetic operations or math functions to 2pcs images.

A numerical expression also has functions as below.

- * Loading a numerical expression from a text file, and saving the numerical expression to the text file.
- * Variable(up to 3 pcs)

In the case of the numerical expression without writing an image, it will be available as a normal calculator. As this software is different from general calculator applications, the text input by the keyboard is main. In addition of the functions above, it will be helpful for data organization of physics experiment, chemical experiment in the science and engineering.

Image's Numerical Expression Writings

This software can load 2 pcs image files. They are a left image(L), a right image(R), individually. Each image has 3 pcs color planes, they must be specified with the color plane as an operand. The examples of the image writings are shown as below.

Lr : Left image's R plane

Rg : Right image's G plane

In another, a brightness(a maximum value in R, G, B) can be specified, too.

Lm : Left image's brightness

Rm : Right image's brightness

Variable's Numerical Expression Writings

In this software, 3 variables can be as the operand.

v1, v2, v3

Operation Environment

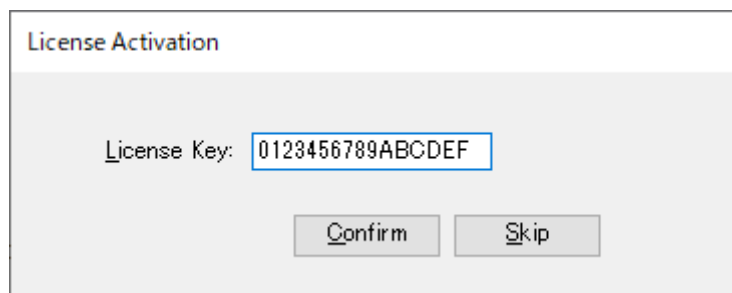
- * Windows10 64bit, or later
- * . Net Framework4.8

Installation Method

There isn't installer. Copy the software-folder to any local directory, then execute the software(Image2Calculator.exe).

License

At software's startup, an input dialog of License key will be displayed.

A screenshot of a 'License Activation' dialog box. The title bar says 'License Activation'. Inside, there is a label 'License Key:' followed by a text input field containing the key '0123456789ABCDEF'. Below the input field are two buttons: 'Confirm' and 'Skip'.

By entering License Key, all functions will be available as Shareware(Purchase). In the other hand, in the case of "Skip" without entering License Key, it will be available as **Freeware(Trial)**. But, in this case, **Function's function will not be available, then only four arithmetic operations** will be available.

Software Function Description



1. Numerical Expression Input Box

This text box is for entering the numerical expression. Dragging and dropping a text file also can be available. For the numerical expression, inserting space characters(space, tab, new line) between an operator and an operand can be OK. A numerical value can be written by the scientific notation as below.

Examples. 3.2×10^{10} , 1.0×10^{20} , -5×10^{-5}

The numerical value's input range is limited as below.

$-1.0 \times 10^{300} \sim 1.0 \times 10^{300}$

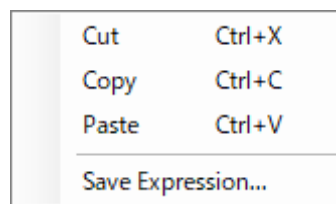
In the other, as an unacceptable notation, the continuous signs are.

Example. $1+-2$, $3--5$ \Rightarrow NG

In this case, use parentheses.

Example. $1+(-2)$, $3-(-5)$ \Rightarrow OK

In addition, the context menu can be opened on the box.



Cut, Copy, Paste	General menus for the text box.
Save Expression	Save the numerical expression as a text file . This can be available from File menu(15).

2. AC

All Clear. Clear Numerical expression input box(1).

3. Exec.

Calculate the numerical expression(1).

4. Answer Box

Display a calculated answer of the numerical expression(1). In the case of the numerical expression with the image, it will not be displayed in Answer box, the image as an answer will be displayed in Answer image's display pane(13). **The answer will be recorded to a log file at every its update.** The log file(ExecLog.csv) will be saved in the folder that the software(exe) is located.

v1	v2	v3	answer	expression
1	2		5.436563657	v2 * exp(v1)
2	2		14.7781122	v2 * exp(v1)
3	2		40.17107385	v2 * exp(v1)

5. Keys of Four Arithmetic Operations, Numerical Values, Constant Value, Symbols

Input keys of four arithmetic operations, numerical values, constant value(π), parentheses. They support an environment without the keyboard.

6. Function Keys

Input keys of functions. They support the environment without the keyboard.

7. Image Keys

Input keys of images. According to the combination of Left, Right and R, G, B, Max(brightness), express the image. They support the environment without the keyboard.

8. Variable Keys/ Input Box of Variable Value

Input keys of variables and their numerical inputs. 3 pcs variables can be available.

v ₁	-2
v ₂	3.0e+10
v ₃	0.05

If the variable exists in the numerical expression(1), calculating the numerical expression(3) will be executed by entering Enter key.

9. Left Image's Display Pane

This pane is for displaying Left image. Loading the image file can be available by dragging and dropping.

10. Right Image's Display Pane

This pane is for displaying Right image. Loading the image file can be available by dragging and dropping.

11. Answer/ RGB Composition(Tab Switching)

Switch tab of Answer image(13) and RGB composition image(14). By setting an answer image to R, G, B of RGB composition image, a color image will be reconstructed.

12. Answer Image's LUT(Look Up Table) Bar

Adjust the answer image's contrast.

382.5	12-2
12-4	74.56

12-5	
[Image Area]	
12-3	33.14
11.5	12-1

12-1. Lower Limit

Display a minimum value of the image after calculating the numerical expression(3). Double-clicking leads to the edit mode, the value can be changeable. Double-clicking again confirms the value.

12-2. Upper Limit

Display a maximum value of the image after calculating the numerical expression(3). Double-clicking leads to the edit mode, the value can be changeable. Double-clicking again confirms the value.

12-3. Lower Threshold

As 0~100 % for Lower limit~Upper limit, set the contrast's Lower threshold. The range of Lower threshold~Upper threshold will be mapped to the image intensity 0~255.

12-4. Upper Threshold

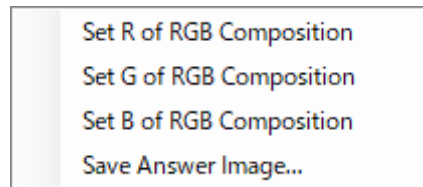
As 0~100 % for Lower limit~Upper limit, set the contrast's Upper threshold. The range of Lower threshold~Upper threshold will be mapped to the image intensity 0~255.

12-5. LUT Bar

By dragging, Lower threshold and Upper threshold will be set and adjusted. **Drag around 2 thresholds or their center.**

13. Answer Image's Display Pane

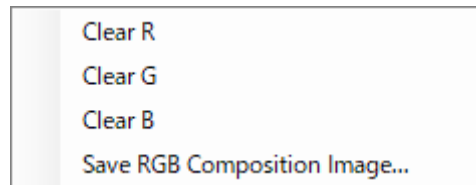
This pane is for displaying Answer image. In addition, the context menu can be opened on the pane.



Set R of RGB Composition	Set the current answer image to RGB composition image(14)'s R plane.
Set G of RGB Composition	Set the current answer image to RGB composition image(14)'s G plane.
Set B of RGB Composition	Set the current answer image to RGB composition image(14)'s B plane.
Save Answer Image	Save Answer image as an image file. This can be available from File menu(15).

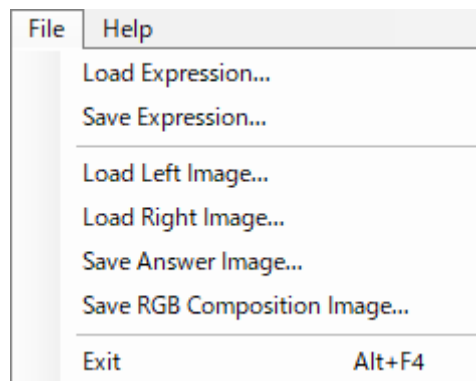
14. RGB Composition Image's Display Pane

This pane is for displaying RGB composition image. In addition, the context menu can be opened on the pane.



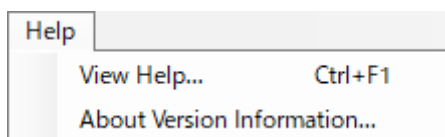
Clear R	Clear R plane.
Clear G	Clear G plane.
Clear B	Clear B plane.
Save RGB Composition Image	Save RGB composition image as an image file. This can be available from File menu(15).

15. File



Load Expression	Load a numerical expression from the text file.
Save Expression	Save the numerical expression as a text file .
Load Left Image	Load an image file. The image will be displayed in Left image's display pane(9).
Load Right Image	Load an image file. The image will be displayed in Right image's display pane (10).
Save Answer Image	Save Answer image as an image file.
Save RGB Composition Image	Save RGB composition image as an image file.
Exit	Exit the software.

16. Help



View Help	Display Help(this document).
About Version Information	Display Version information.

17. Exit

Exit the software. This can be available from File menu(15).

18. Image's Intensity Value Display(Status Bar)

On the image pane(Left image(9), Right image(10), Answer image(13), RGB composition image(14)), mouse-dragging displays intensities.

(x, y)=(272, 315): Lr=135 g=53 b=16 m=135: Rr=82 g=82 b=82 m=82: Answer=151.4: RGB Compos.r=126 g=126 b=126

Terms of Service

Although some functions are limited, this software is available as Freeware(Trial). In the case of using all functions as Shareware(Purchase), it is necessary to purchase a license key.

Inquiry

Please visit the following URL for the bug or the request.

<https://ao-quest.com/>