

# How to Use Sankaku (Triangle)

This instruction manual tells you how to use the Sankaku.

## Introduction

Sankaku is a software program that can create an unfolded tetrahedron image from a cylindrical projection image (Figure 1). Sankaku converts a two dimensional image into a picture with four sides, a tetrahedron (Figure 2). After you have created the tetrahedron, you can print it out and fold it creating a three dimensional version of any two dimensional picture! Sankaku is an ideal program for teachers, artists, and students alike. In fact, Sankaku is very fun to use that even young children will find it to be fascinating.

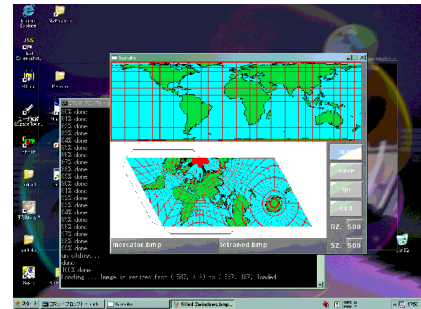
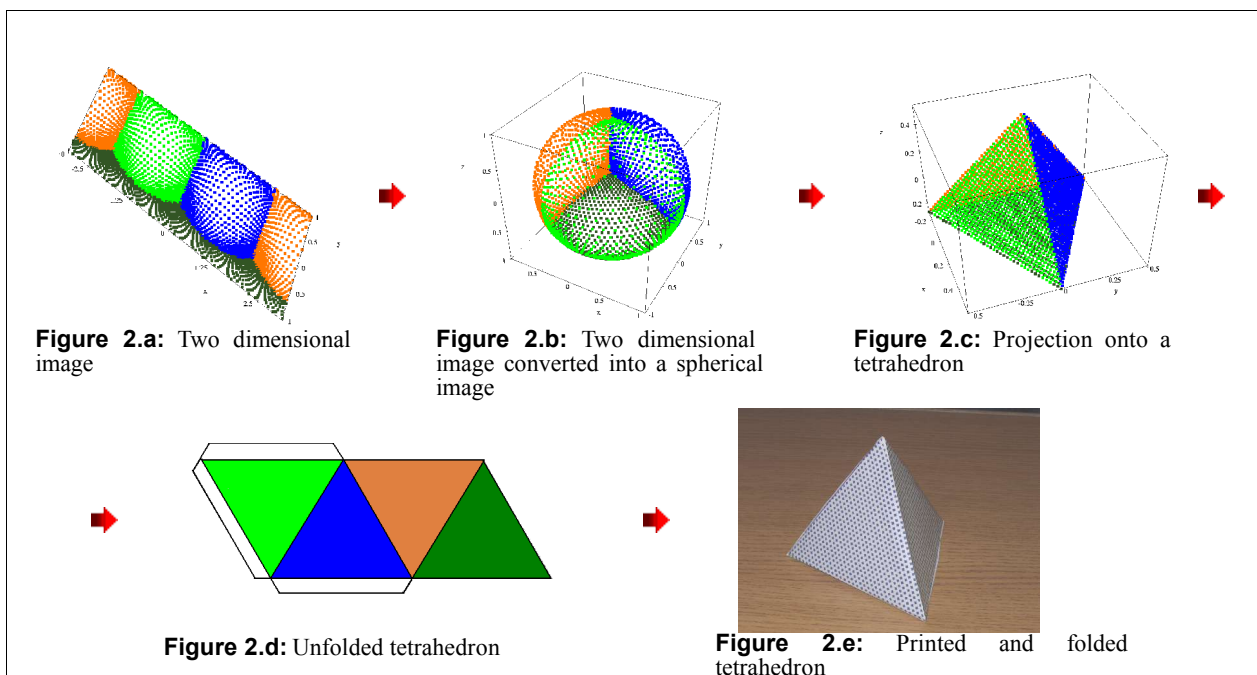


Figure 1: Sankaku

Figure 2: How Sankaku Works



## Requirements

To operate this program, you will need:

- Windows or Linux Operating System
- An Image file you want to convert
- Disk space to save your result (at least 1MB)
- Basic knowledge of your operating system

To use Sankaku, you should first download the program from the Internet ([www2f.biglobe.ne.jp/~notchi/](http://www2f.biglobe.ne.jp/~notchi/))

## Description of the Equipment

This section describes the file components and the Window components. The file components are files that are compressed in the sankaku zip file. The Window components are the software parts of the program.

### File Components

When you unzip the zip file for Sankaku, the following files will be created. This instruction manual is the *instruction.pdf*. Make sure none of these are missing.



Figure 3: List of the Files Contained in Sankaku's Distribution

### Window Components

Sankaku consists of:

- Command prompt (Figure 4.a)
- Main window (Figure 4.b)
  - ✧ Buttons
  - ✧ Parameter Boxes
  - ✧ Input/Output File Boxes
  - ✧ Source Image Screen
  - ✧ Result Image Screen

Figure 4: Main Widgets of the Sankaku

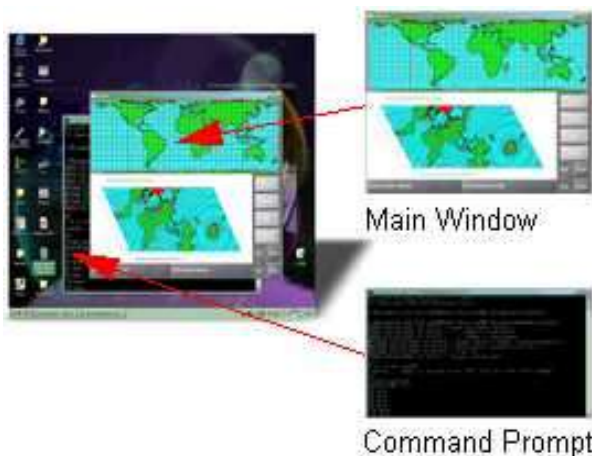


Figure 4.a: Main window and command prompt

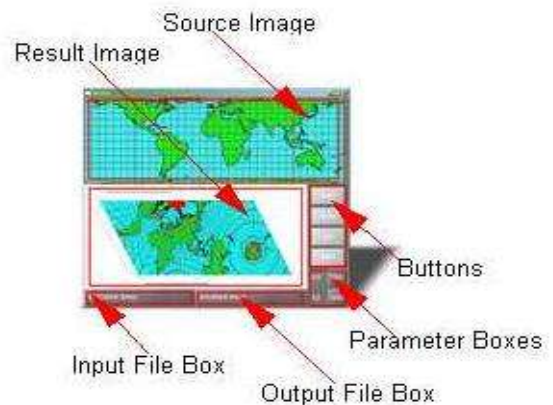


Figure 4.b: Widgets on the main window.

## Directions

### 1. Running the Program (Figure 5)

Double click the Sankaku icon. The main window and the command prompt will show up.



Figure 5: Sankaku Icon

### 2. Loading an Image (Figure 6)

- a. Type a filename in the Input Box. You can type the file name with the path.
- b. Click the Load Button. This will load an image file you specified in the Input Box.

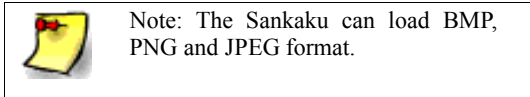


Figure 6: Input Box and Load Button

### 3. Setting Parameters (Figure 7)

- a. Set a number in the RZ Edit Box. RZ is a resolution that one edge of the Sankaku is divided by. This number must be greater than 10 and smaller than SZ.
- b. Set a number in the SZ Edit Box. SZ stands for the size of one edge of a Sankaku, in pixel, on the tetrahedron that will be created later.

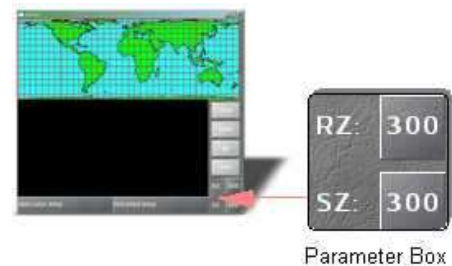
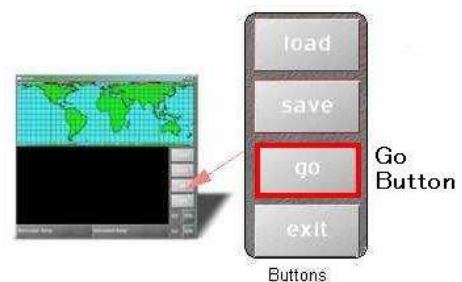


Figure 7: Parameter Box

### 4. Processing the Projection (Figure 8)

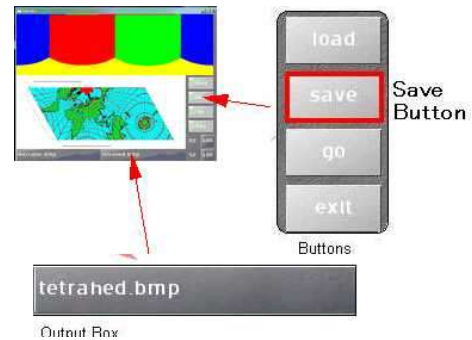
Click on Go Button. When the above steps are done, click this button to start the calculation to convert your source image to the unfolded tetrahedron.



Disfigure 8: Go Button

## 5. Saving the Result (Figure 9)

**Click on the Save Button.** This will save your result in a BMP format. After the calculations, the Source Image Screen will fill with four colors and then the converted image will appear on the Result Image Screen.



**Figure 9:** Save Button and Output Box

## Troubleshooting

If you have any trouble operating Sankaku, please refer to the following table. This is the list of the symptoms and solutions.

**Table 1:** The Symptom and Solution

Symptom	Solution
Sankaku can not load a source image	Check the spelling of the path. Make sure the file name has one of the following extensions: bmp, png or jpg.
Sankaku can not save result image	Check the extension of the filename. Sankaku can only save in BMP file format.
Sankaku doesn't start processing	Make sure the Source Image is loaded. The file must be loaded before it starts processing.
	Make sure the appropriate number is specified in the RZ Box. The number must be greater than 10 and smaller than the number in the SZ Box.
	Make sure the right number is typed in the SZ Box. The number must be positive.

If you still have trouble, please e-mail the author: Nobuhiro Kuroiwa (nobu@finitetime.com). 🇯🇵