Instructions for testing and using the library

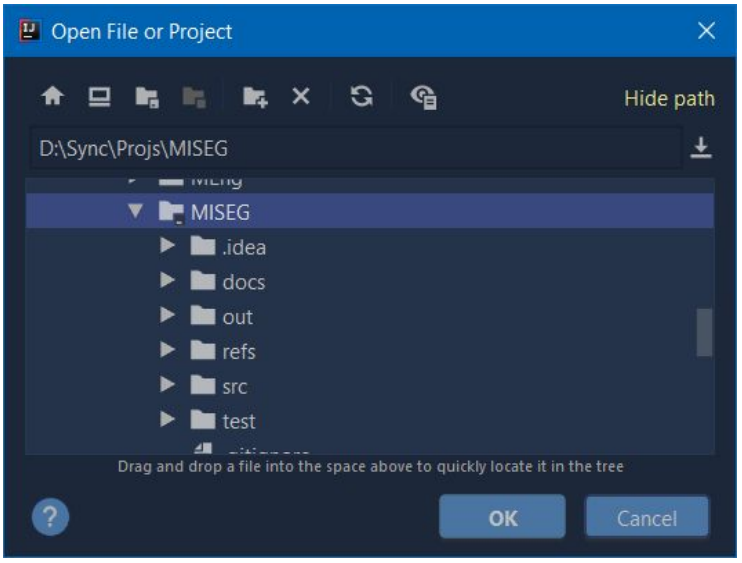
There are two ways to test and use MISEG:

1. Directly Access the Source Code

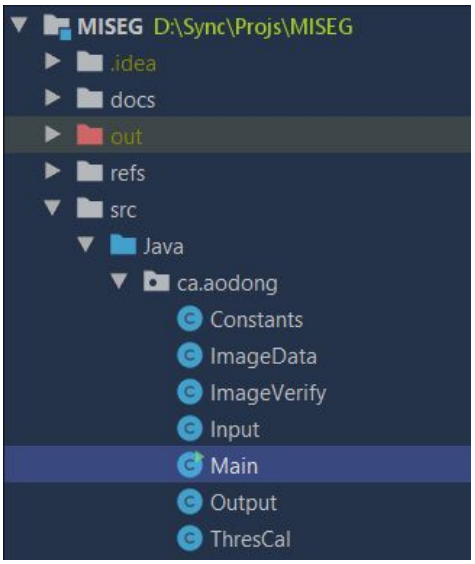
1.1 Test and Run with an IDE

This way is straight forward and recommended to test the library for the first time. You can test it by following the steps:

1). Install an IDE for Java on your local machine (preferably IntelliJ IDEA or Eclipse).
2). Install JDK (preferably JDK 11) to your computer.
3). Clone the whole repo https://github.com/Ao99/MISEG to your computer.
4). Make sure that the MISEG/test/input/ contains input images and the folder MISEG/test/output/ exist.
5). Open the project from the **root folder** - MISEG



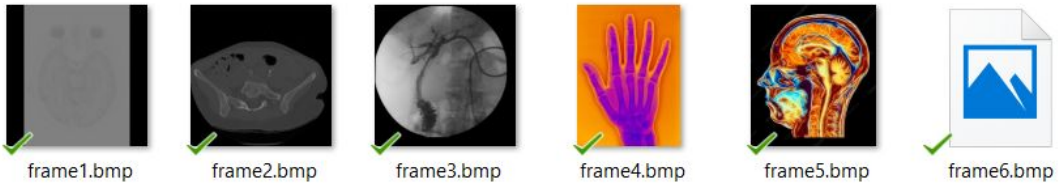
6). Using IDE to run the sample Main.java at MISEG\src\Java\ca\aodong



7). The following message including 2 errors should be shown:

```
Error: the format of frame 6 is not supported.
Error: cannot find the file test/input/frame7.bmp
Warning: frame 6 is not loaded.
Warning: frame 7 is not loaded.
5 image frames have been loaded.
```

Because MISEG\test\input\frame6.bmp is a damaged file, and MISEG\test\input\frame7.bmp does not exist, getting the above messages means the library is running well



8). The following message should also be shown:

```
*********************************************
Number of thresholds to use:
please input a number from the set [1, 2, 3]
*********************************************
```

Please input a number 1, 2 or 3 according to the instructions.

9). If the input is not a number (such as “A”) or a number out of the bound (such as “100”), the following error message will be shown, and a new input will be asked:

```
A
Error: input is not a number from the set,
please read the following instructions carefully and try again:
*****************************************
Number of thresholds to use:
please input a number from the set [1, 2, 3]
*****************************************
```

10). If a correct input (such as “3”) is given, the calculated optimal thresholds will be displayed as follows:

```
*****************************************
Number of thresholds to use:
please input a number from the set [1, 2, 3]
*****************************************
3
The multiple threshold values for frame 1 are k1=1, k2=121, k3=125.
The multiple threshold values for frame 2 are k1=28, k2=61, k3=77.
The multiple threshold values for frame 3 are k1=69, k2=157, k3=198.
The multiple threshold values for frame 4 are k1=32, k2=92, k3=151.
The multiple threshold values for frame 5 are k1=27, k2=83, k3=150.
```

11). More error messages for frame6 and frame7 should be shown as follows:

```
Warning: thresholds for frame 6 are not calculated.
Warning: frame 6 is not segmented nor saved.
Warning: thresholds for frame 7 are not calculated.
Warning: frame 7 is not segmented nor saved.
5 segmented frames have been saved.
```

12). The output segmentation images should have been saved in the folder MISEG\test\output\

13). Modify and expand the source codes according to your own needs.

1.2 Test and Run with the Command Line

1). Install JDK (preferably JDK 11) to your computer.

2). Clone the whole repo https://github.com/Ao99/MISEG to your computer.

3). Make sure that the MISEG/test/input/ contains input images and the folder MISEG/test/output/ exist.

4). Use any text editor to open MISEG\src\Java\ca\aodong\Main.java, and change the input and output directories to **absolute paths** where the input and output folders are, such as the following picture,

```
public static void main(String[] args) {
    String filenameIn = "D:/Sync/Projs/MISEG/test/input/";
    String filenameOut = "D:/Sync/Projs/MISEG/test/output/";
```

5). Use the command line at the root directory MISEG/, and type the following command:

javac -sourcepath src/Java/ca/aodong/ -d out/production/MISEG src/Java/ca/aodong/*.java

6). Use the following command line to locate to the production foder:

cd out/production/MISEG

7). Use the following command line to run the software:

java ca.aodong.Main

8). An example is shown as follows

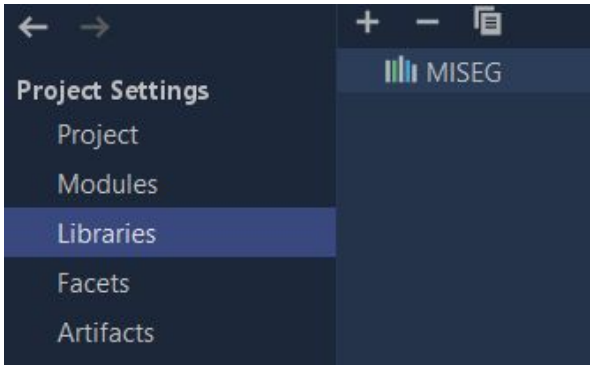
```
PS D:\sync\projs\MISEG> javac -sourcepath src/Java/ca/aodong/ -d out/production/MISEG src/Java/ca/aodong/*.java
PS D:\sync\projs\MISEG> cd out/production/MISEG
PS D:\sync\projs\MISEG\out\production\MISEG> java ca.aodong.Main
```

9). Follow the instructions 7 to 13 from 1.1 **Test and Run with an IDE**.

2. Use the MISEG.jar File

This is the usual way of using a published Java library. You can use and test it by following the steps:

1). Install an IDE for Java on your local machine (preferably IntelliJ IDEA or Eclipse).
2). Install JDK (preferably JDK 11) to your computer.
3). Clone the whole repo https://github.com/Ao99/MISEG to your computer.
4). Create a new Java project (preferably not in the same directory as the cloned repo).
5). Add MISEG\src\publish\MISEG.jar as a library of the new project.



6). Copy the input images into the new project directory. For example, copy everything from MISEG\test\input\ to NewProject\test\input\.
7). Create the output folder. For example, NewProject\test\output\.
8). Create a new Main.java file in the new project to use the library, or copy the prepared sample from MISEG\src\publish\Main.java to the new project.
9). Make sure that in Main.java, input and output directory have been set correctly

```
public static void main(String[] args) {
    String filenameIn = "test/input/";
    String filenameOut = "test/output/";
```

10). Run Main.java, and follow the instructions 7 to 13 from 1.1 **Test and Run with an IDE**.