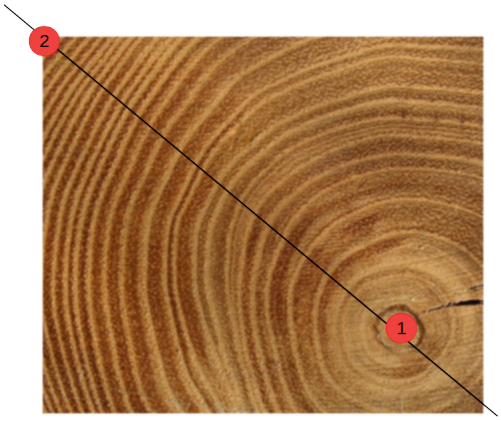
Documentation

Tree-ring image analysis (MatLab)

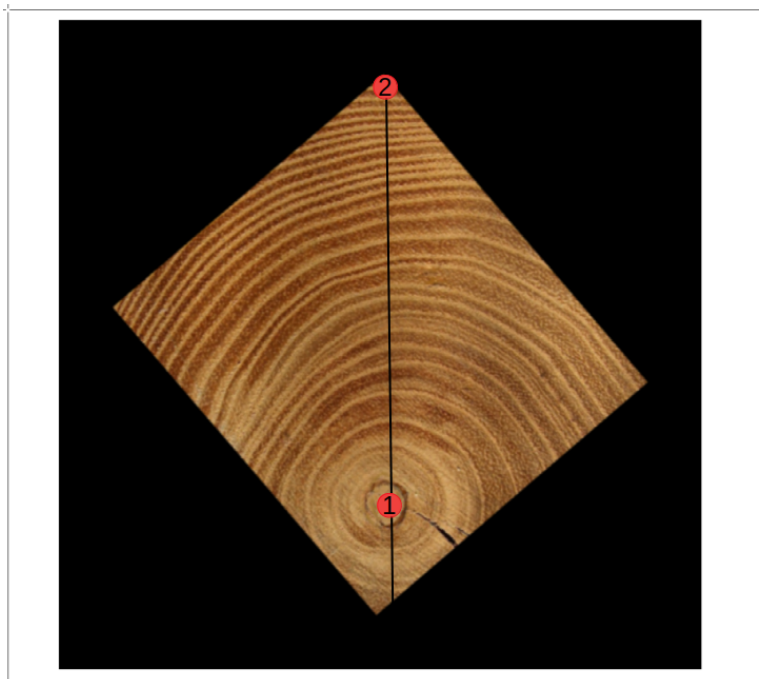
Instructions:

1. Straigthening the image and cropping it:

Choose 2 points along the long axis:



A new image appears where the image is straigth. Choose two points to define crop (first bottom then top)



You will then be shown a slice of the crop that looks something like this:

This same slice will be written into an image file titled "1.png". At this stage one can also use an image manipulation program to make the dark areas to pop out. Here I have used Gimp to add gaussian blur to the image (50px horizontally and 5px vertically):

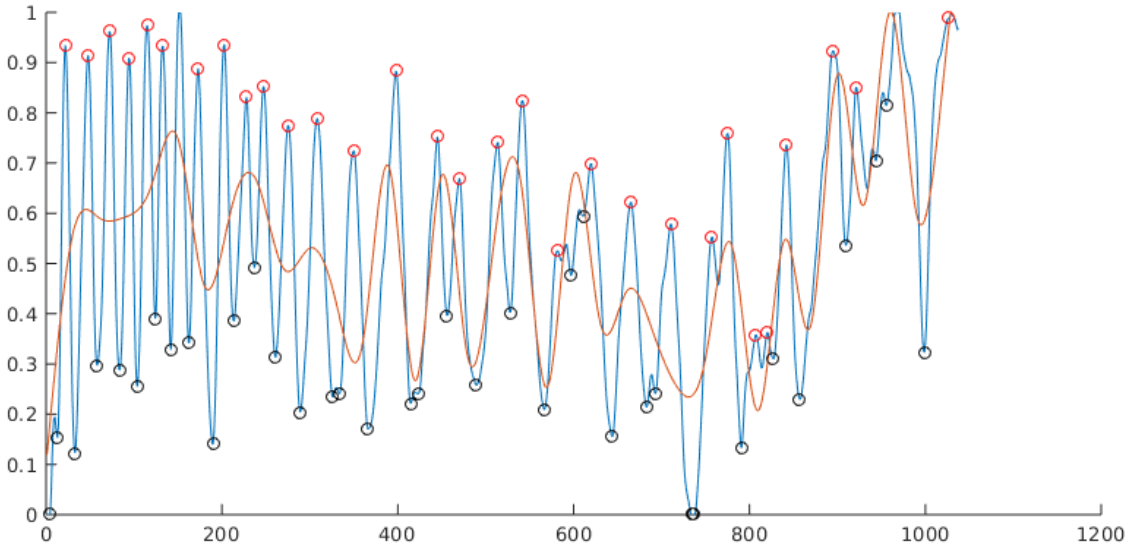
2. Determining the levels and finding the lines. Loading image in Matlab:

```
Ic=imread('1.png')
```

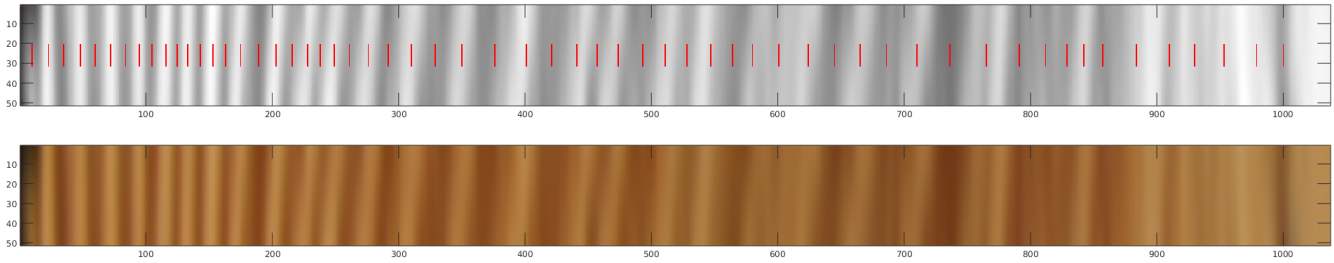
Using grey.m function that acts like a main of the script set. Ic contains the matrix for blurred picture that will be used fro analysis and I contains tha matrix on the original slice for the purpose of drawing the points on the image for final manual checkup. In this example I have used grey(Ic, Ic)

```
>> grey(Ic, I)
```

The program prints out to figures: One of the picture levels identification and other one of the identified light and dark areas.
Levels:



Light and dark:



The program has some parameters that can be altered to adjust the output:

```
function grey(I, II)
% I = mod, II = original;
n = 5;
lim = 1; %n/2;
cutb = 0;%-0.10;%-0.05;
smoothing = 0.9;
calibration = 60/1070;
```

3. Manual finishing and checkup:
If the rings are found somewhat correctly but you would like to fix some of them you cah do it by adding a point with left click and removing one by clicking on it with the right click.