



# Summary



- Why choosing ImageJ ?
- How to install/run ImageJ/Fiji
- ImageJ as a tool to display images.
- What is "metadata"?
- Record macro
- Where to get help

Hi! And welcome to this new lesson. An introduction to ImageJ. Today we'll see why we chose ImageJ for this course. We'll also see how to install and run ImageJ. How to use it as a tool to display images. We'll also see how to retrieve metadata from an image. And finally how to record a macro and where to get some help.

Notes

Summary



0m 05s

# ImageJ - History

**ImageJ**  
Image Processing and Analysis in Java

1997



Wayne  
Rasband

**NIH Image to ImageJ: 25 years of  
image analysis.**

Schneider CA, Rasband WS, Eliceiri KW.  
[Nat Methods](#). 2012 Jul;9(7):671-5.  
PMID : 22930834



2005



Johannes  
Schindelin



[github.com/fiji](https://github.com/fiji) **contributors**



Many softwares exist in order to process and analyze images. Some of them are open source, while some of others are close source. ImageJ is one of these open source softwares. It has been available since 97. And it takes its origin from another software: NIH Image. We recommend you to read the corresponding article, published in Natural Methods. Since 2005 a new distribution of ImageJ, named Fiji, has appeared. Fiji means "Fiji is just Image J"! It is now a collective efforts of many contributors, and is a distribution we recommend you to install and use during this course.

Notes

Summary



# Fiji - Home Page



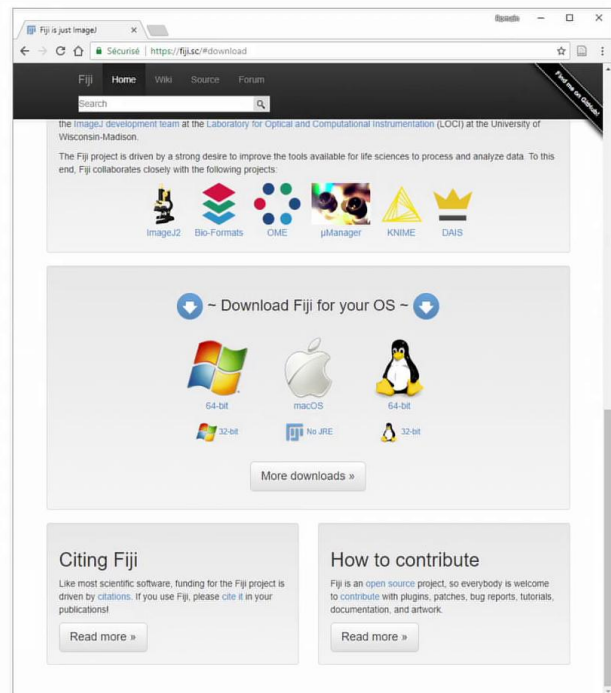
On the home page of Fiji, you will find the link to download it.

Notes

Summary



# Fiji - Home Page



Fiji is available for all major operating systems: Windows, Mac OS, and Linux.

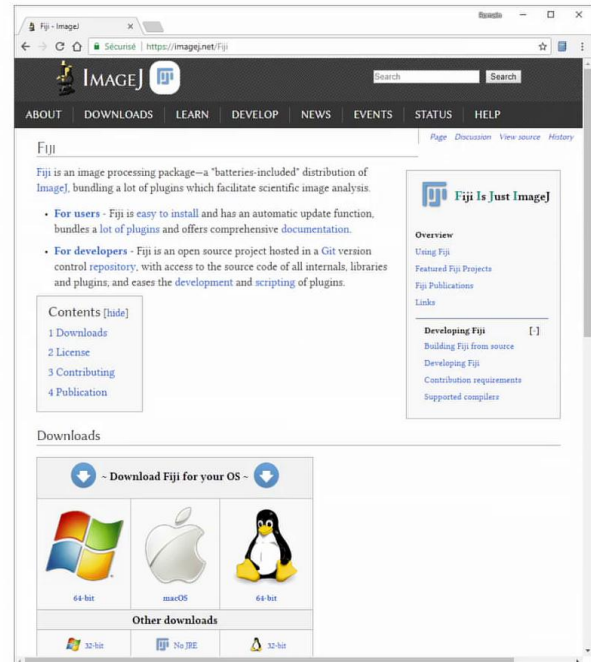
Notes

Summary



# Fiji - Benefits

- Java
- Large community
  - 1000 plugins
  - Documentation, tutorials



It is Java based software that can work on different platforms. An this is one of the characteristics and benefits of ImageJ. ImageJ has large community of users, with more than 1000 plugins. A plugin is a small piece of software dedicated to a specific task. So there's a lot of documentation available, with tutorials explaining how to use these tools.

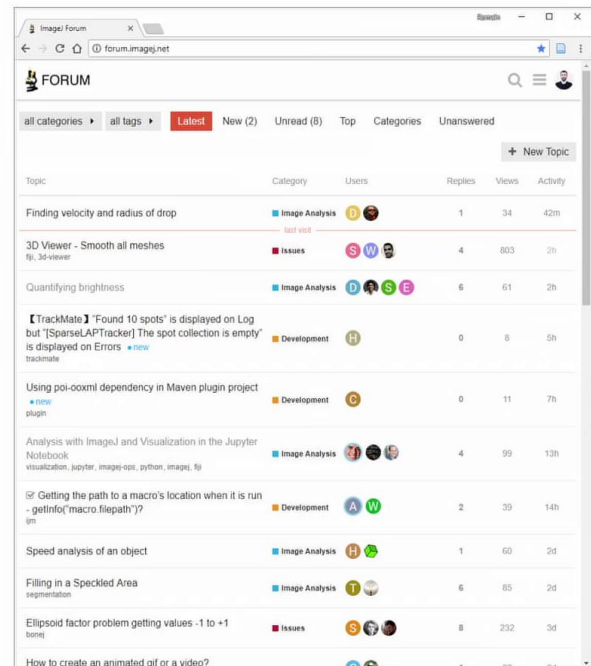
Notes

Summary



# Fiji - Benefits

- Java
- Large community
  - 1000 plugins
  - Documentation, tutorials
  - Forum



There is also a very active forum where everyone can find answers for common issues; or, if necessary, ask questions to solve an image processing and analysis issue.

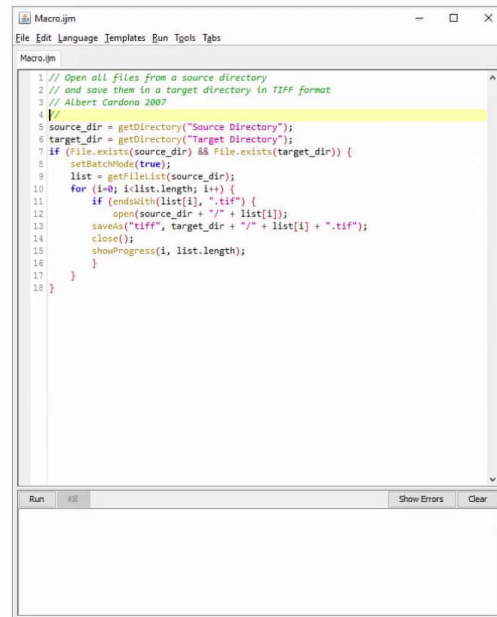
Notes

Summary



# Fiji - Benefits

- Java
- Large community
  - 1000 plugins
  - Documentation, tutorials
  - Forum
  - Easy Scripting using “macro language”



```
1 // Open all files from a source directory
2 // and save them in a target directory in TIFF format
3 // Albert Cardona 2007
4
5 source_dir = getDirectory("Source Directory");
6 target_dir = getDirectory("Target Directory");
7 if (File.exists(source_dir) && File.exists(target_dir)) {
8     setBatchMode(true);
9     list = getFileList(source_dir);
10    for (i=0; i<list.length; i++) {
11        if (endsWith(list[i], ".tif")) {
12            open(source_dir + "/" + list[i]);
13            saveAs("tiff", target_dir + "/" + list[i] + ".tif");
14            close();
15            showProgress(i, list.length);
16        }
17    }
18 }
```

Another advantage of ImageJ, and one of the reason of its success, is the Macro Language. It allows you to easily record a sequence of operations, as you apply them on the image, and to reproduce this sequence on a different image, or even on a folder containing many images.

Notes

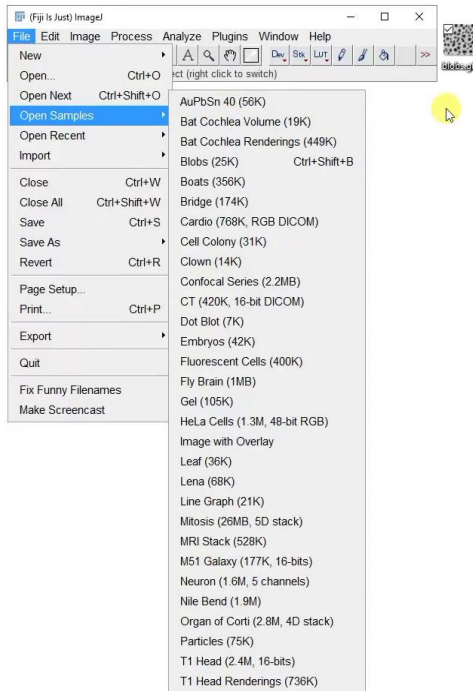
Summary



2m 03s



# Fiji - First use



So now that we know why we want to use this software, let's start! This is the main bar of Fiji with the different menus. When you will click on one of them, you can see the list of items. And what it contains. Here is the Help and here, the Plugins. To open an image you can use a function 'File > open'. Or, during the MOOC, we will often use some images from 'Open Samples'.

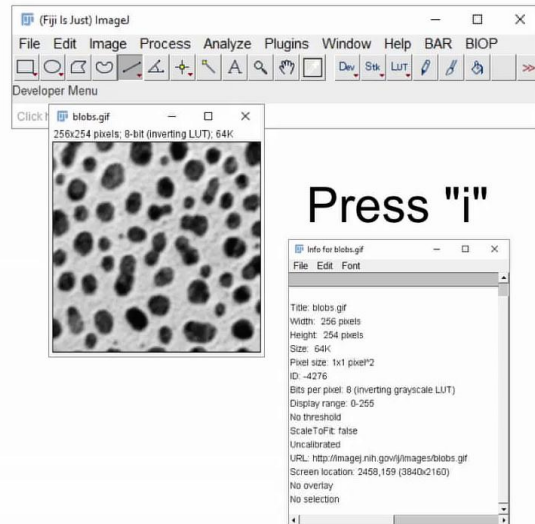
Notes

Summary



2m 22s

- Pixel Size, bit depth, ...



Finally you can simply drag and drop a file on the main bar to make it appear as an independent window. Metadata are all the information that you may have to use and that are stored within your image, like the pixel size the bit depth etc. You can get the info window by pressing the "i" on your keyboard.

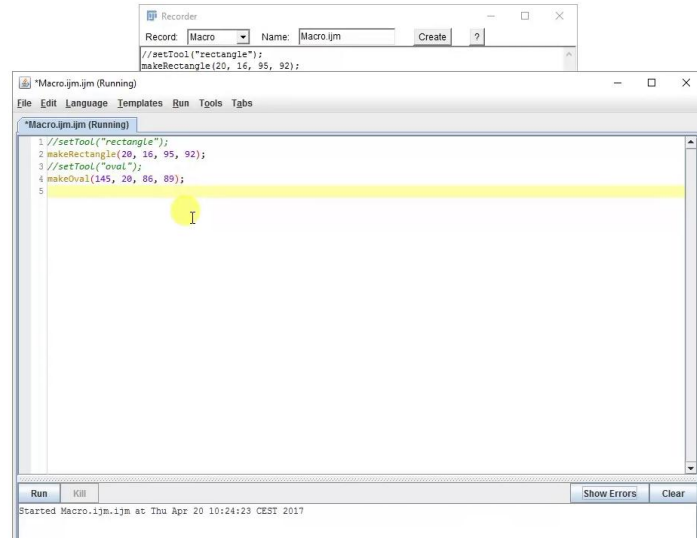
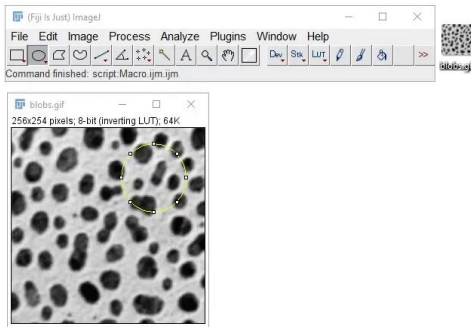
Notes

Summary



2m 54s

# Fiji - Create a Macro



Now let's see how to use a recorder. First you go to **Plugins > Macro > Record**. You see a new window popping up and this image. You can select the type of language. Here we select the Macro. If I take a tool like a Rectangle and draw one on the image, you will see that 2 lines are added. One for the tool selection and one for the drawing of the rectangle. Now if I take a new tool and draw a circle, it's also recorded. To create a macro I simply press the button "Create". And a new window will pop up with the corresponding line in it. Now if I select my image and press "Run", it will re-apply the exact same sequence of operations.

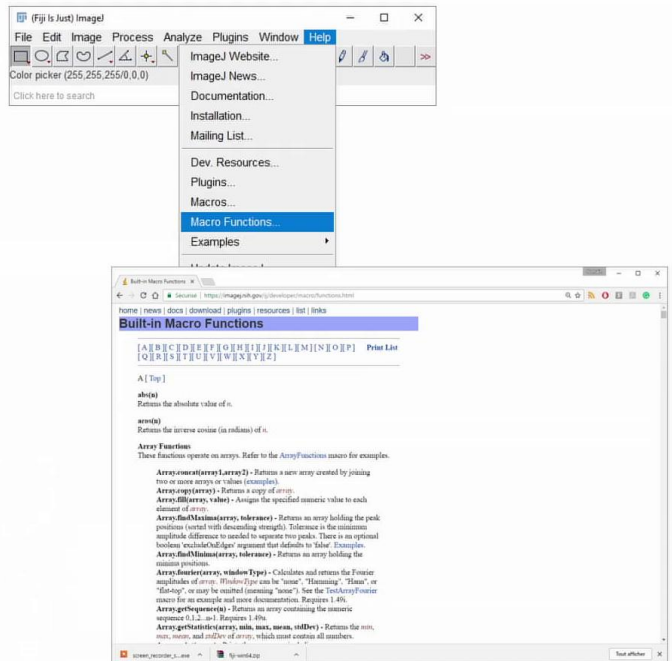
Notes

Summary



3m 15s

# Fiji - Finding Function



Many of the plugins can be recorded. And you will find additional functions on the dedicated webpage that you can access from the "Help" menu.

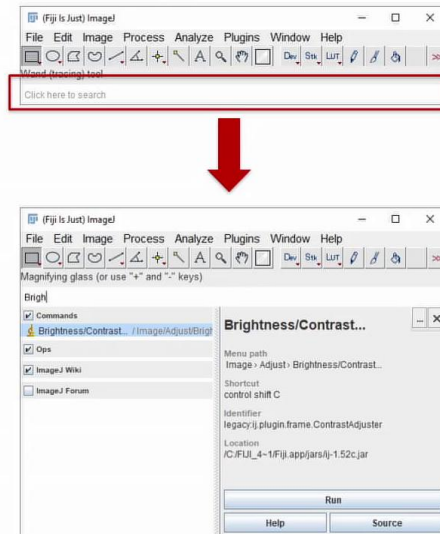
Notes

Summary



4m 05s

# Fiji - Finding Function



Finally you can also search for a function using the search bar. As soon as you start typing it, it will offer you some functions with the corresponding term. Here for example I started to type "brightness", and it offers me the function. This is the key feature that will allow you to find very easily the functions you will need during this course.

Notes

Summary



# Conclusion

- Fiji = ImageJ
- Fiji benefits & First use
- Images contain Metadata
  - usefull information required for processing
- Use of the Recorder
  - Keep track of actions
  - Reproducibility
- Where to find additional help
  - Function web page
  - forum



Okay! This is the end of the introduction to ImageJ. We saw together that Fiji is just ImageJ. We also had a look to the benefits of this software. That images contain metadata. How to use a recorder to keep track of your actions; and re-use this sequence of action. Finally we saw where to find additional macro functions, and where to get help. Thank you for your attention! And goodbye!

Notes

Summary



4m 34s