

Harvard NeuroDiscovery Center

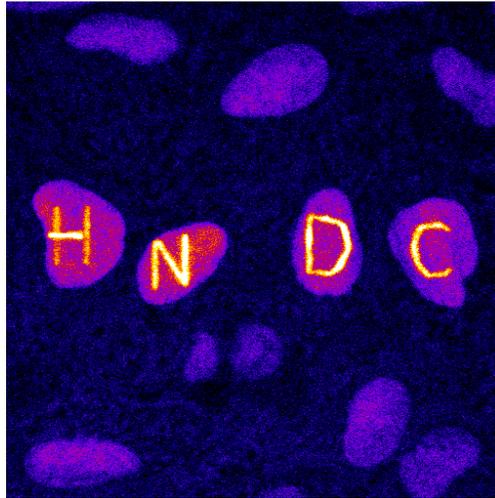
COLLABORATING TO CURE  
NEUROLOGIC AND PSYCHIATRIC DISEASE



Enhanced Neuroimaging Core

## Digital Image Analysis with ImageJ

April 3<sup>rd</sup> – April 5<sup>th</sup>, 2017



This intensive 3-day workshop taught by Dr. Lai Ding, Manager of the Harvard NeuroDiscovery Center Enhanced Neuroimaging Core, introduces ImageJ, its basic functions, and its macro programming capabilities. Using real imaging projects performed at the Harvard NeuroDiscovery Center's Enhanced Neuroimaging Core, Dr. Ding will demonstrate common image analysis tasks such as basic image processing, stack alignment, cell counting and measurement. Macro writing will be covered to demonstrate how to automate a series of ImageJ commands, to process massive datasets automatically and to store results as desired.

The workshop is broken down into three sessions. Interested participants can sign up for one or more sessions depending on their interest and experience. See tentative schedule below.

## Tentative Program Schedule:

Session I (April 3<sup>rd</sup> Monday)

**ImageJ for beginners:** basic ImageJ functions, measurement, filtering, background subtraction, cell counting, particle analysis, and ethics on image processing.

8:30am – 9:00am	Registration and continental breakfast
9:00am – 12:00am	Basic functions of ImageJ and measurement
12:00pm – 1:00pm	Lunch
1:00pm – 3:00pm	Cell counting, particle analysis
3:00pm – 4:30pm	Lab practice I
4:30pm – 5:00pm	Digital image process ethics

Session II (April 4<sup>th</sup> Tuesday)

**Advanced ImageJ:** morphology filter, thresholding methods, using ImageJ on FRAP, colocalization analysis and wound assay, designing image analysis protocols.

8:30am – 9:00am	Q&A, continental breakfast
9:00am – 11:00am	Applications of ImageJ: colocalization, FRAP, wound assay
11:00am – 12:00pm	Lab practice II
12:00pm – 1:00pm	Lunch
1:00pm – 3:00pm	Morphology analysis, segmentation algorithms
3:00pm – 4:00pm	Lab practice III
4:00pm – 5:00pm	Useful plugins

Session III (April 5<sup>th</sup> Wednesday)

**ImageJ Macro Programming:** introduce ImageJ macro programming language, record image process protocols as macro, batch process multiple images, user interactive features in macro, case study with sample codes. **This session is aimed towards the non-programmer, however we do expect the participant to have a basic idea of programming flow control syntax (“for” loop, “if-else” control). The participants are strongly encouraged to go through a brief tutorial on the ImageJ official website before the workshop. <http://rsb.info.nih.gov/ij/developer/macro/macros.html>**

8:00am – 8:30am	Q&A, continental breakfast
8:30am -- 9:15am	Introducing Macro programming, Macro recording.
9:15am – 10:00am	Macro Lab I
10:00am – 10:45am	Batch process code
10:45am – 11:30am	Macro Lab II
11:30pm – 12:15pm	Lunch
12:15pm – 1:00pm	Macro lab III
1:00pm – 2:00pm	Macro case study: particle tracking
2:00pm – 2:30pm	Q&A

**Enrollment:**

The workshop is limited to a maximum of 18 participants for each session (first come first served). Participants are encouraged to bring their own image analysis projects which may be discussed in the workshop (not guaranteed).

To register for the class, please fill out the registration form and submit it online.

<https://docs.google.com/forms/d/e/1FAIpQLScmjCG43RdUUbYnvsTs9a1svxY2xiq5rdTjDNccMjhLVODy4w/viewform>

**Payment:**

A seat for the workshop is guaranteed once a payment is either made by check or a PO or 33-digit billing code is provided by the due date specified.

The registration fee includes:

- Handout materials, sample images with analysis protocols and sample macro codes
- Continental breakfast, light lunch, coffee break

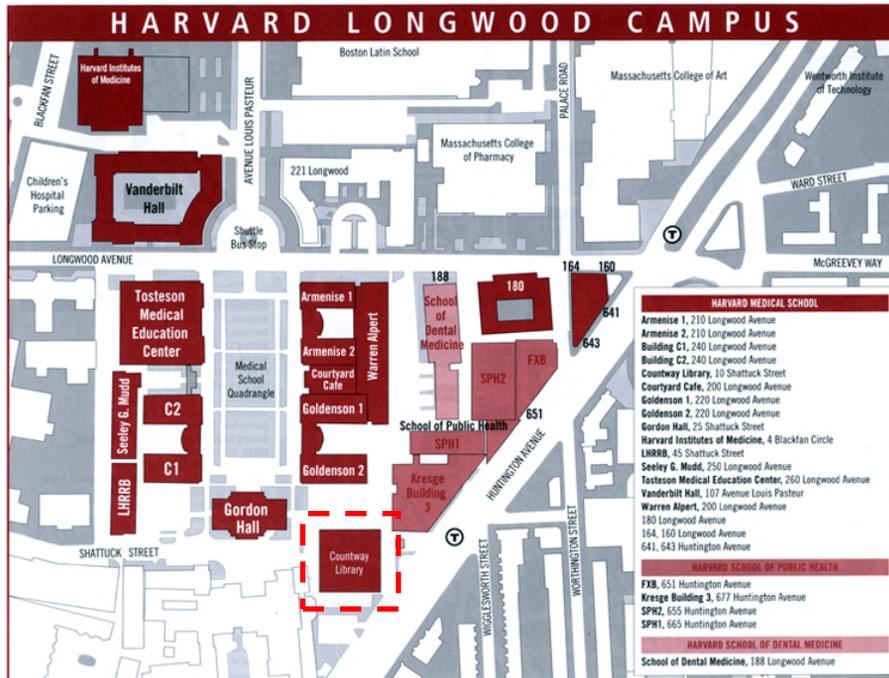
Early bird rate: *\$125 for one session; \$225 if registering for two sessions. \$320 if registering for all three sessions. Registration and payment due March 20<sup>th</sup> 2017*  
Regular rate (applies after March 20<sup>th</sup> 2017): *\$175 for one session; \$315 if registering for two sessions. \$450 if registering for all three sessions. Payment due on March 27<sup>th</sup> 2017*

**Methods of payment:**

- Harvard 33 digit billing code
- PO number
- Check, payable to "Harvard NeuroDiscovery Center"

**Location:**

L2-025  
Countway Library Computer Classroom  
Harvard Medical School  
10 Shattuck St. Boston, MA 02115



**Cancellation policy:**

Cancellation by March 27<sup>th</sup>, 2017: full refund  
 Cancellation after March 27<sup>th</sup>, 2017: no refund

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