**Tools**

**Fiji (is just Image)**

* + ImageJ software but will all the useful plugins already installed
  + good for figuring out a pipeline that works
    - faster than implementing same pipeline in code

**Python(libariies)**

1. OpenCV
   * Faster than PIL
   * preferred library when doing image processing
2. Pillow
   * Usable with Python's GUI tkinter and customtkinter
3. scikit (ndimage)
   * **ndimage**
   * **scipy.signal**
   * Has various submodules that are useful for more complex image processing
   * has some of the functions implemented that are not implemented in OpenCV
     + exp: probabilistic hough transform
4. Shapely
   * Useful for finding intersections

[**Image.sc**](http://Image.sc)

* Discussion forum for image processing

**Image Manipulation**

**Morphological Operations**

<https://docs.opencv.org/3.4/db/df6/tutorial_erosion_dilatation.html>

Inversion

Thresh holding

Erosion

Dilation

Opening

Closing

**Noise Removal**

1. Median blur
2. Bilateral blur
3. (sometimes) Gaussian Blur

**Edge detection**

1. Canny Edge Detection
2. Binary threshold
3. Watershed algorithm