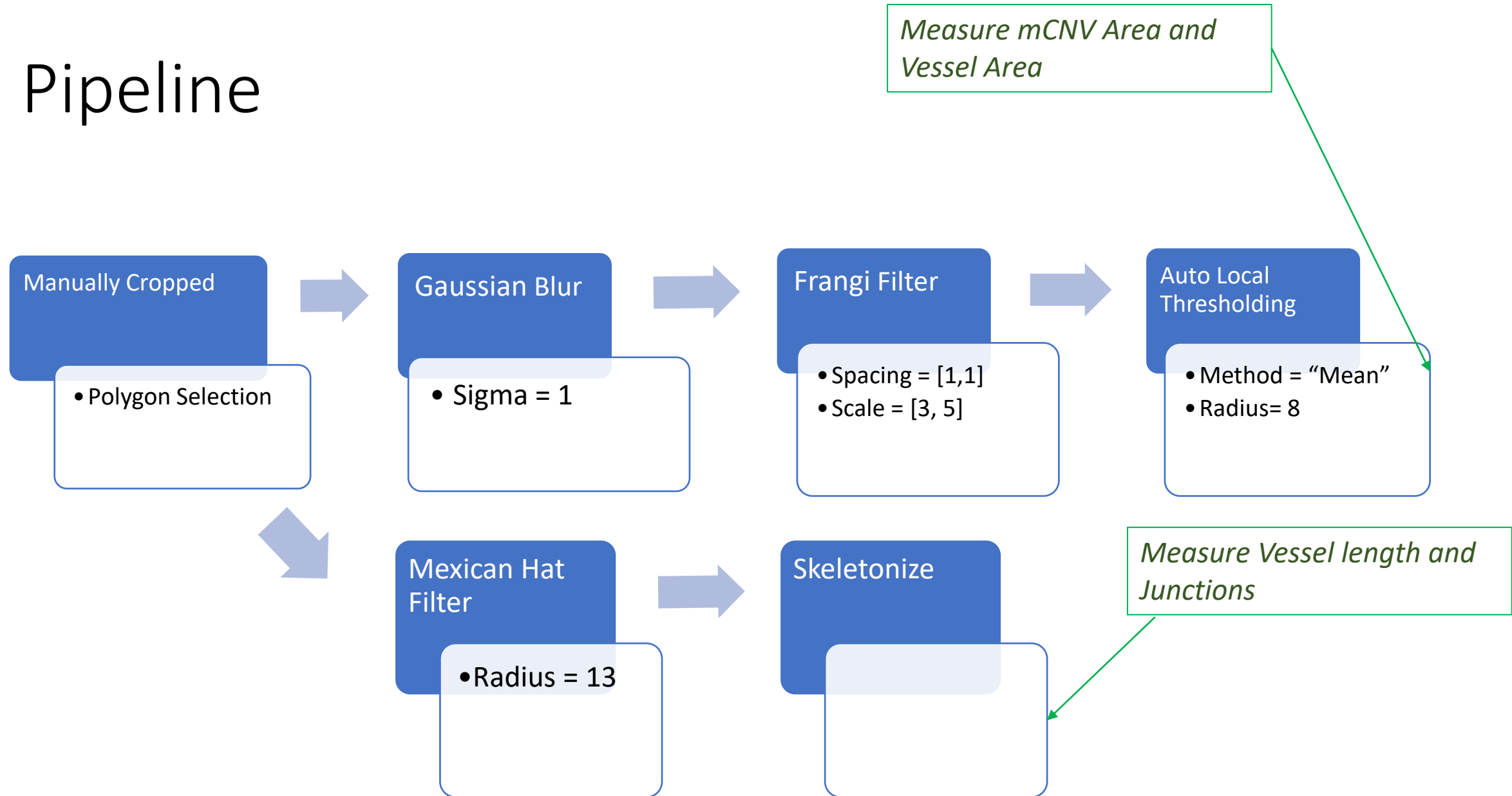


mCNV Image Analysis

Progress so far

Pipeline



mCNV Attributes

- Measured Attributes

1. mCNV Area
2. Vessel Area
3. Vessel Length
4. Fractal Dimension
5. Vessel Junction

- Derived Attributes

1. Vessel Density
2. Vessel Diameter
3. Junction Density
4. Vessel Tortuosity

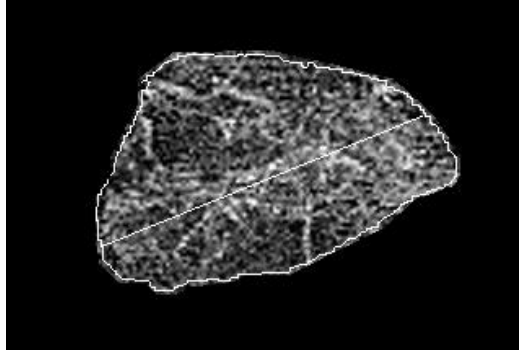
(Underlined Attributes have been measured so far)

Function Parameters

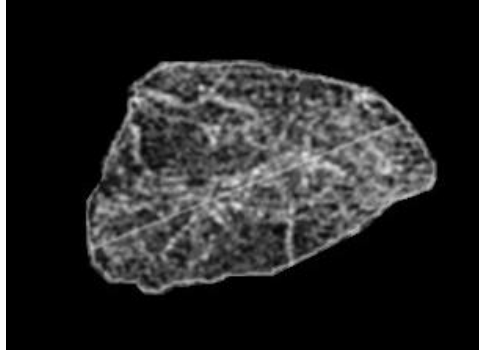
- The following Function parameters can be tuned to improve accuracy:

Function	Parameter	Current Value
Gaussian Blurring	Sigma	1
Frangi Vesselness Filter	Spacing	[1, 1]
	Scale	[3, 5]
Auto Local Thresholding	Method	“mean”
	Radius	8
Mexican Hat Filter	Radius	13

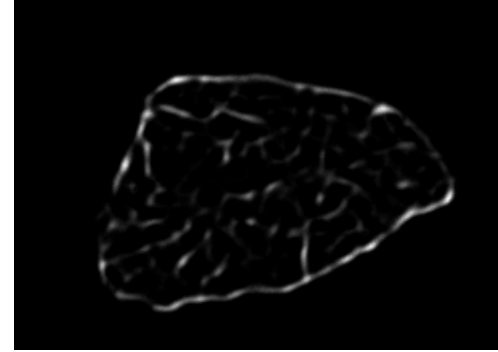
Sample Stages from Pipeline



1. Manually Cropped



2. Gaussian Blurring



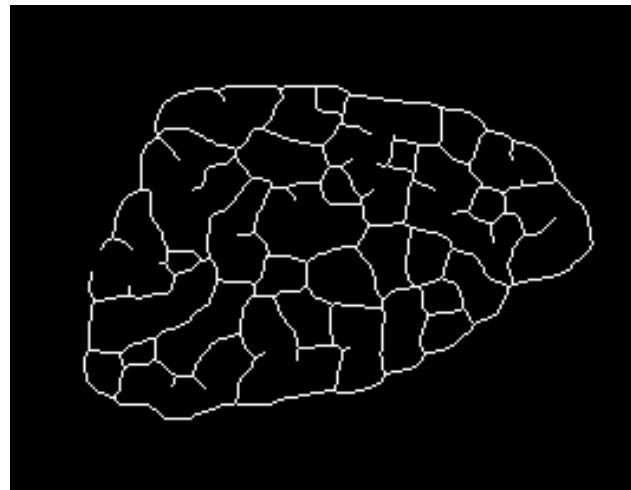
3. Frangi Vesselness



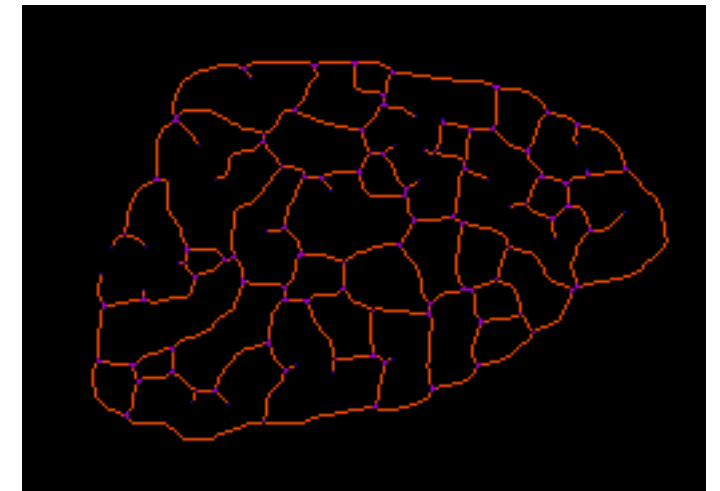
4. Auto Local Thresholding



5. Mexican Hat Filter



6. Skeletonized



7. Skeleton Analysis

Attributes measured from Sample Image

mCNV Area (<i>mA</i>) (mm ²)	Vessel Area (<i>vA</i>) (mm ²)	Vessel Junctions (<i>J</i>)	Vessel Length (<i>vL</i>) (mm)	Vessel Density (= <i>vA</i> / <i>mA</i>)	Junction Density (= <i>J</i> / <i>vL</i>)
0.844	0.395	84	13.593	0.468009	6.179651

- Similarly, a folder of images can be processed and the attributes can be written to a CSV file
- The macros for doing this are written in ImageJ Macro Language (.ijm) and Python