AUTO TRACING AND CORRECTION SCHEME

AUTO TRACING:

1. Process the image stack using auto tracing.
2. Disconnection of linepath starting point from will be corrected by Matlab, no manual correction needed.

MANUAL CORRECTION:

1. Connect two disjoined segments by adding a new segment, which will be merged in Matlab correction. No need to deleted or retrace existing segments. See cases in Figure 1.

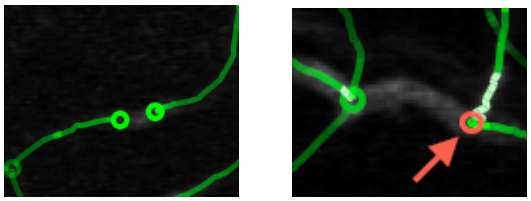

Figure 1. (Left) Straight connect. (Right) Add new node(s) on or near the existing linpath, and connect.

2. Make sure place starting and ending linepath points close to the corresponding nodes (<5px). See Figure 2.

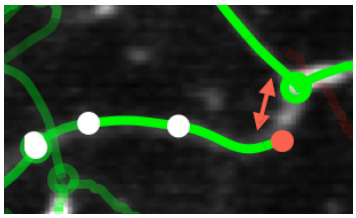

Figure 2. This example shows segment too distanced away from node for Matlab to correct.

3. Mark potential ambiguous crosses. Use all other stacks to resolve.
4. Keep tracing all intersections towards the image boundary. See Figure 3.

Figure 3. A good example of tracing towards image boundary. We need the bifurcation information for topology analysis.

5. Make sure to mark the surface arteries and veins. Only mark the “elbows” as penetrating arterials and venules. “Elbow” is defined as the segment connected to surface arteries or veins, while penetrating or ascending through the tissue, and stops at the first bifurcation node. See Figure 4.

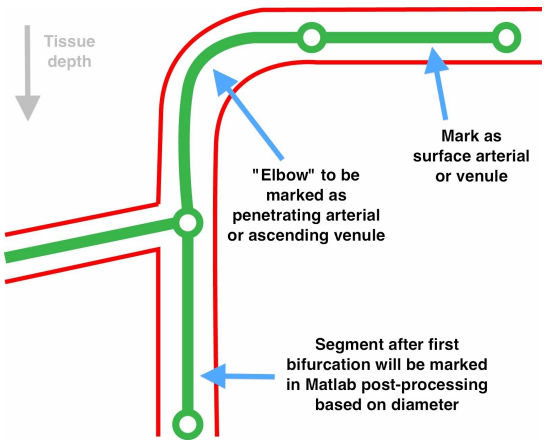

Figure 4. Notation illustration.