Results (mitochondria and synapse segmentation)

Mouse neuropil (SBSFEM)

Drosophila first instar larva ventral nerve cord (SSTEM)

Semi-Automatic Segmentation Method

Guided Sparse Labeling
- Overlay gridlines on the original image
- User indicates where gridlines cross the cell membranes

Min-cost Path Finding
- Use Dijkstra’s algorithm for the path finding
- Computed the min-cost path between all pairs of membranes for a given grid square
- Cost function is such that pixels near in intensity to the labeled membrane will have a low cost and those further away will have a higher cost.

Representation of the result
- Merge multiple paths along the same membrane using morphologically processing
- Replace binary membrane labels with original intensity labels for removal of inaccurate paths through thresholding.

Results (membrane detection)

Mouse neuropil (SBSFEM)

Drosophila first instar larva ventral nerve cord (SSTEM)

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Collaborators:
National Center for Microscopy and Imaging Research at UCSD

Table 1. Performance of the multi-scale contextual model and post-processing methods (PDE + watershed merge tree) for the mouse neuropil SBSFEM dataset.

Table 2. Testing performance of the multi-scale contextual model and post-processing methods (PDE + watershed merge tree) for the Drosophila VNC sSTEM dataset.