Segmentation documentation

**handles:**

1. Images
   1. I: Entire image [Nx,Ny,Nz]
   2. I\_box: Restricted image [nx,ny,nz]
   3. I\_grad: Anisotropic TV of I\_box [nx-1,ny-1,nz]
   4. I\_denoise: Denoised I\_box [nx,ny,nz]
   5. I\_denoise\_past: Past I\_denoise, currently used in undo button [nx,ny,nz]
   6. bw, bw2-bw5: Different stages of editing I\_denoise [nx,ny,nz]
   7. bw\_past [nx,ny,nz]
   8. bw\_true [nx,ny,nz]
2. Image parameters
   1. dx, dy, dz: Dimensions of voxel [1]
   2. denoise\_param: How much to denoise for [nz,1]
   3. disk\_param: Size of disk for holomorphic operations [nz,1]
   4. removal\_param: Threshold for removing small objects [nz,1]
3. Slice indexing
   1. slice\_start: number of first slice [1], {1,2,…,Nz}
   2. slice\_end: number of last slice [1], {1,2,…,Nz}
   3. slice\_num: number of slices [1], nz in {1,2,…,nz}
   4. slice\_start\_full: min{slice\_start, regions\_slice\_start}
   5. slice\_end\_full: max{slice\_end, regions\_slice\_end}
   6. slice\_num\_full: number of slices [1], slice\_end\_full – slice\_start\_full + 1
   7. slice\_start\_value, slice\_end\_value: Tags for the text box for choosing which slices to segment
4. Curves and perimeter
   1. perim: Perimeter of each curve [nz,1]
   2. smooth\_perim: cell array [nz,1]
5. Extra regions
   1. smooth\_extra: cell array [1,K]. smooth\_extra{i}:
      1. connect [1,2]: connect(1) = 0 if connects to no at beginning, 1 if connects to main region, and j in {2,…,i-1} if connects to j-th region. Same with connect(2) with ending.
      2. slice [1,2]: slice(1) is first slice in [1,Nz], slice(2) is last.
      3. num\_slice [1]: slice(2) – slice(1) + 1
      4. binary [nx,ny,num\_slice]: the bw regions
      5. perim: cell array [1,num\_slice]. perim{i} is curve.
6. Display:
   1. ratio\_I, ratio\_I\_box: Ratio for update plot [1]
   2. rect: [x1, y1, x2-x1, y2-y1]
   3. x1\_value, x2\_value, y1\_value, y2\_value: (x,y)-coordinates of I\_box relative to I.