**Starrynite II code overview**

**Cell Detection**

Directory:distribution\_code. Contains code for detection and segmentation of cells which can be used independently of lineaging.

commandLineDriver is top level interface, ProcessSequence process each image in a series loading the image and calling processVolume for each accumulating results in a data structure esequence that is ultimately output to a .mat file. In ProcessVolume filtering is performed . slices are segmented and 3D maxima picked by createDiskSet. findOverlookedNuclei runs shape model to find unaccounted for nuclei. resolveConflicts examines all overlapping segmented nuclei to decide if they should be merged or remain split.

**Cell Lineaging**

Directory:distribution\_lineaging contains code which takes segmented nuclei and strings them together into a lineage

trainingDriver is the top level driver for training bifurcation classifiers using existing detection result .mat files and edited lineages (typically created by running the pipeline in naïve mode, or with an old model)

productionDriver is the top level driver for running normally,

the common sub driver for both usages is tracking\_driver\_new\_classifier\_based\_version

which calls:

linkEasyCases to link easy cases

greedyEndScore multiple times with different settings to create the tentative lineage

greedydeleteFPbranches which resoves tentative bifurcations

**Driver UI**

Directory: launcher\_Interface contains GUI used to interactivly specify ROI for analysis and call cell detection and lineaging portions of pipeline.