

## Overview of Tracking Codes

Name	Input	Output	Notes
cell_tracking_nogui.m	-Directories and filenames of phase contrast, fluorescent channels, and masks -getParameters.m -ObtainObjects.m -MakeTrajectoriesFromBinnedObjects.m	-trajectory data	Main program: -assigns where input and output directories are -use getParameters.m to make experiment.parameters -pass experiment.parameters to ObtainObjects.m -pass experiment.ObjectsByFrame to makeTrajectoriesFromBinnedObjects
getParameters.m	-experiment structure -fluorflag	-parameters structures -Object Navigator structures	Sets up and assigns parameters structure (itself a substructure of experiments structure) with several substructures. Define Bin size scaling, average diameter, and the weighing of the scoring function.  ***Previously in cell_tracking_nogui.m file
GetFilenameCellList.m	-experiment.phasedir, or experiment.maskdir -phasepattern	- parameters.maskfilenames - parameters.fluorfilenames	Extracts parameters.*filenames from chosen directories and searchpattern
GetFilenameCellListConcat.m	-experiment.phasedir -phasepattern - experiment.maskdir - parameters.maskConcat	- parameters.maskfilenamesToOutput	Extracts parameters.maskfilenames ToOutput from chosen directories and searchpattern, concatenating parameters.maskConcat ='mask_ '
ObtainObjects.m	-experiment.parameters -blankflag (c1 subsampling rate)	-ObjectsByFrame, structure the objects found in each frame and their properties	Imreads masks, calculates regionprops from their connected components (found with Matlab's bwconncomp) in CurrentObjects. Imreads FluorImages

MakeTrajectoriesFromBinnedObjects.m	-experiment.Traj - experiment.TrajInFrames	- experiment.ObjectsByFrame -experiment.parameters -velocityfield (if applicable)	uses CreateTrajBinFromActiveTraj.m, ProcessSingleFrameForTrajectories.m, CreateTrajBinFromActiveTraj.m to make the trajectories.
CreateTrajBinFromActiveTraj.m	-curFrame, -activeTraj, - ObjectsContainedInFrames, - Traj,velocityfield,parameters	-Traj -TrajBin	uses GetPredictedObject.m and getBinCoords.m to set up TrajBin, a cell array with the current objects in the active trajectories binned
GetPredictedObject.m	-BaseObject -curFrame - TrajToProcess(endIndex,params.TN.frame) -params -velocityfield (if applicable)	PredictedObject	Can correct the PredictedObject, based on BaseObject and the velocityfield data
getBinCoords.m	- params.ON.CentroidX: params.ON.CentroidY) -params.binSize	-BinX -BinY	scales centroid positions by params.binSize
PruneFromActiveTrajBinList	activeTraj	-Traj, -params.TN -curFrame -activeTraj, - NumberOfFramesToConsider	used by ProcessSingleFrameForTrajectories.m to end the trajectories that have not generated a high enough score and end them.
ProcessSingleFrameForTrajectories.m	curFrame, Traj, TrajBin, activeTraj, ObjectsInCurrentFrame, params	-Traj, -activeTraj, -ObjCalcProps	Process each object in the current frame and find trajectories in the objects neighborhood located in the TrajBin. Score each object against all located trajectories and store best score, that is lower than the scoreCutoff parameter
CalculateObjectProperties.m	- ObjectsInCurrentFrame(k,:) -TrajBin -params	ObjCalcProps	outputs score, ObjCalcProps, params.CP.score
mexModWillsMetric			assign score to each pair of objects

