**Structure of DataBaseSUAok**

Array structure with n neuron entries ( n = 83 neurons)

Each array has the following fields:

1. ID: neuron number… not used.
2. Behav: a 96 trial x 14 columns array. The columns are
3. Interval ( it is a constant because this is a spatial categorization block)
4. Distance between bars (in pixels)
5. Outcome: 0 = correct, 707 = error
6. Category: 1 = short, 2 = long
7. Monkey’s responses: 0 = short, 1 = long
8. Relative stimulus magnitude (from 1 -8)

From column 7 to 14 we have the task times in milliseconds

1. Trial beginning (close to zero)
2. Start of eye position reading
3. First stimulus (end of control period)
4. Second stimulus
5. Response Target presentation (end of delay)
6. Movement Onset (end of reaction time)
7. Time of target reaching (end of movement time)
8. Reward delivery
9. Spikes: 96 cells with the spikes times for each trial of Behav in strict order

Programs:

The main program is callRasterPloting\_CategorizationTask that does the following:

1. Reads the behavioral time and task parameters from Behav and the spike times from Spike for one neuron.
2. Calls DrawRasterfromSUA\_CategorizationOK that draws raster and SDF of the neuron
3. Calls ComputeEncoding that does the following
4. Computes the discharge rates of the cell for the 96 trials during a window between stim 1 and stim 2 (669 ms)
5. Computes the mutual information MI = MutualInformation(DischargeperMag)
6. Performs the curvefitting of 6 functions, the plotting of the predicted MSE and residuals.
7. Computes the Choice Probability [Choice\_P,ChoiceDiff05,Choice\_PALL,ChoiceALLDiff05] = ComputeChoiceP\_MeanofeachMagnitude(Behtimes, StimDischarge);