**Workflow Overview:**

**GRF/MTC/MTN (.dat) + spikes (.nev) = combined.mat**

1. Behavior data comes in as a .dat file. We use groupAllTrialsOneStruct.m to convert and save the .dat file to a .mat file. This new .mat file will contain all the trials as structs within a cell array (trials) and an overview struct (header) that contains a general view of the behavior settings used.
2. Spike data comes in as a .nev file. This single .nev file will contain the entire days’ worth of spike data spanning GaborRF, RFMap, and MTCAN/MTNAN.
3. Sorted spike data (.nev) will be converted to a .mat file using extractNEVData.m. This .m script filters the NEV events and saves three separate variables taskNames, taskEvents, and taskSpikes. taskNames contain the different task plugins used in the .nev file, taskEvents extracts all events in chan0 (from .dat) and taskSpikes is the remaining channel data in the form of 3 columns (channel, unit, timestamp).
4. Using insertSpikeDataIntoTrials.m, I can insert the appropriate taskEvents and taskSpikes into the corresponding trial struct within trials array. This is then saved as a .mat file (-v7.3) that combines lablib data (.dat) with spike data (.nev)

**Analysis**

Analysis will take place in python. Python has libraries which will import .mat files and enable you to access them similar to accessing them in matlab. usefulFns.py is a script that has a function for loading -v7.3 .mat files. This script will return the variables ‘allTrials’ and ‘header.’

* **Tuning (RF location, direction, speed)**
  + directionTuning.py will generate a pdf for each unit’s direction tuning.
  + RFTuning.py will generate a pdf of each unit’s RF location.
  + speedTuning.py will generate a pdf of each unit’s speed tuning.