**People involved**: Catrina Hacker

**Short abstract**: Most visual neuroscience studies involve recording the responses of visually selective neurons to single carefully curated stimuli. However, natural vision involves the presentation of many stimuli that must be simultaneously represented. Caruso et al. found that neurons in inferior colliculus and the macaque face patch multiplex by stochastically switching between representations of each of two simultaneously presented stimuli (auditory or visual). Caruso et al. propose two possible circuits that could decode these multiplexed signals to produce separable information about the two stimuli being presented. I plan to simulate at least one of these models to determine the set of parameters that make this possible and to extend this model to simulate populations of neurons that can represent complex stimuli like faces.

**PIs that are relevant**: Jennifer Groh

Plan:

1. Do it for a single neuron—this could be applicable more broadly
   1. Tweak parameters and see what happens
2. Now simulate several neurons and look at population codes – like attractor states?
   1. Start with all neurons switching at the same time to preserve population code, maybe see what the geometry looks like if you switch them at different times later