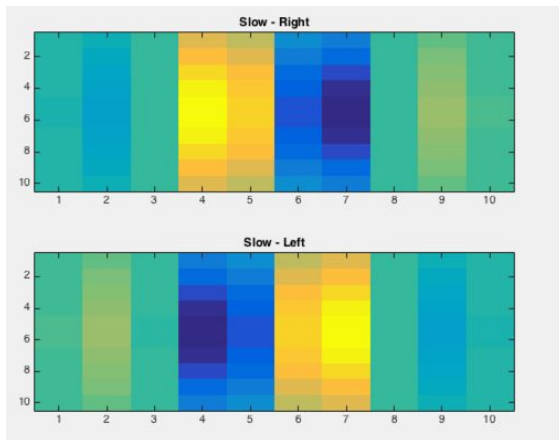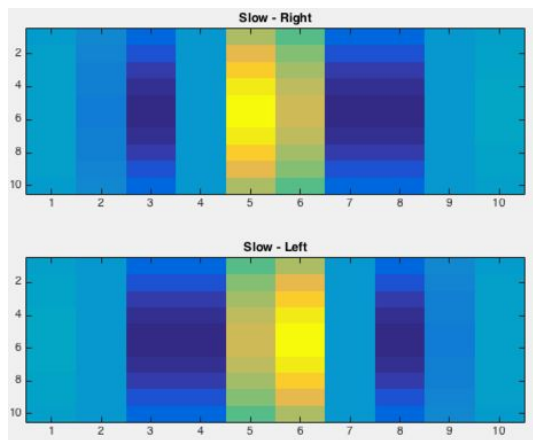# Part 1

Below are four timestamps of 2 of the chosen filters, the top row corresponds to a Slow-Right movement, the bottom row corresponds to a Slow-Left movement. It is apparent that the "on" area of the top filter is moving right, and the "on" area of the bottom filter is moving left. The other two movement parameters produce similar results but with different speeds
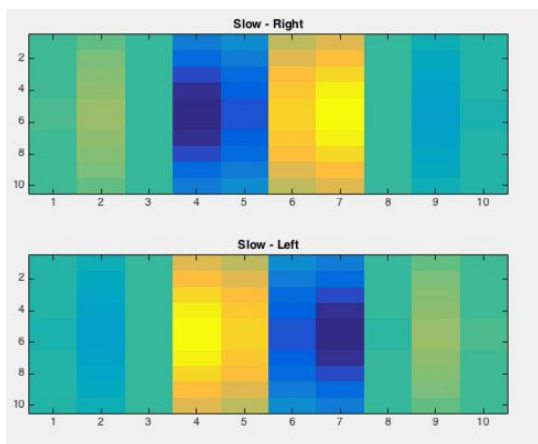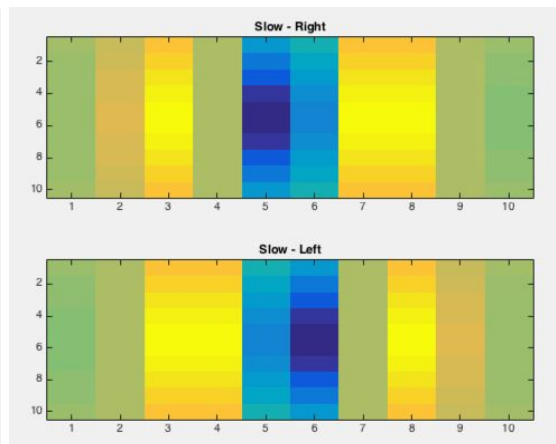
T1

T2

T3

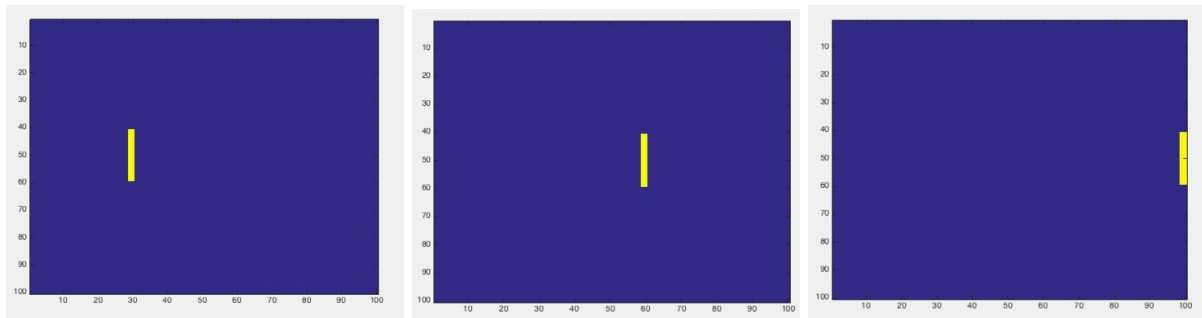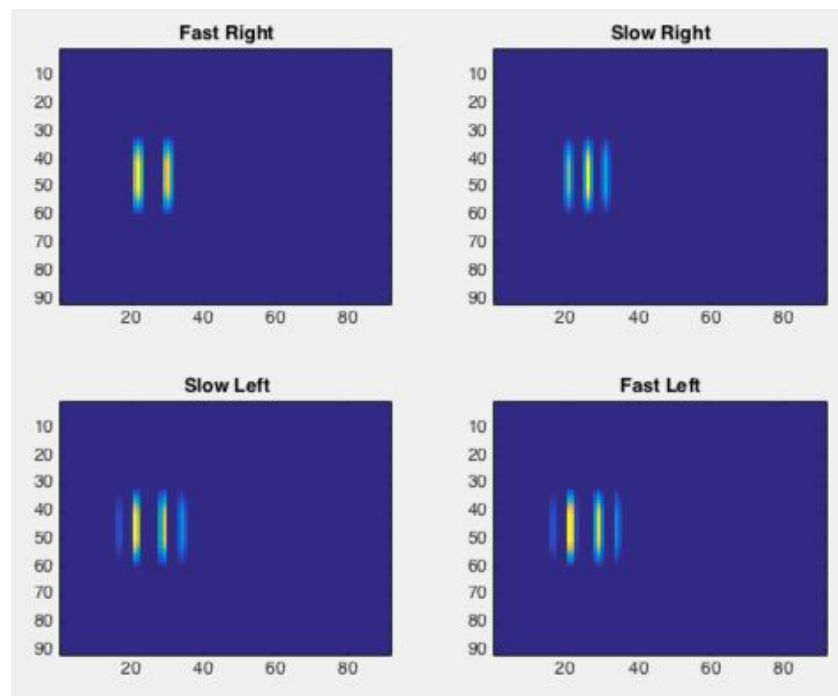

T4

Part 2

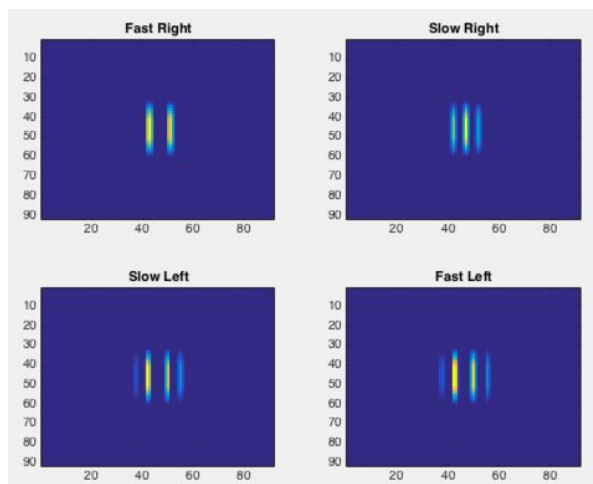A few frames of the bar video, moving from left to right

Adding in smaller distances for the bars to move results in a slower distance for the bars perceived motion (due to the time-segments being fixed)
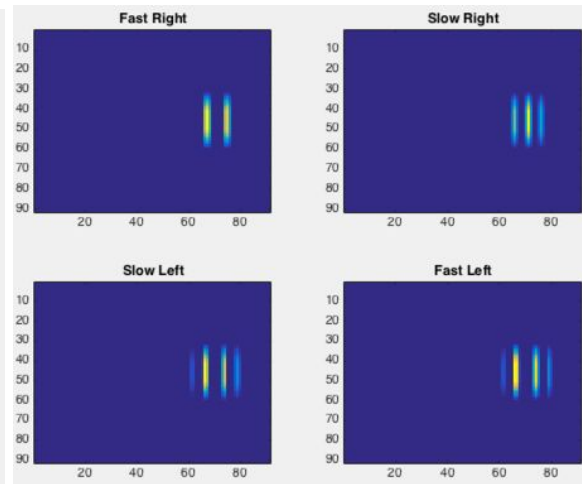
Part 3

Early Timestamp

Middle Timestamp

Late Timestamp

On top of the phase-tuned and angle-tuned abilities of the filters that we have explored previously, these filters have rate-tuning that makes them move selective to direction and speed of motion. Although it's more easily observed in the center pixel response than here, it is evident that the right moving filters are performing better than the left moving ones, by how closely and strongly they are able to pick up the signals.

Part 5

Center Pixel Activation
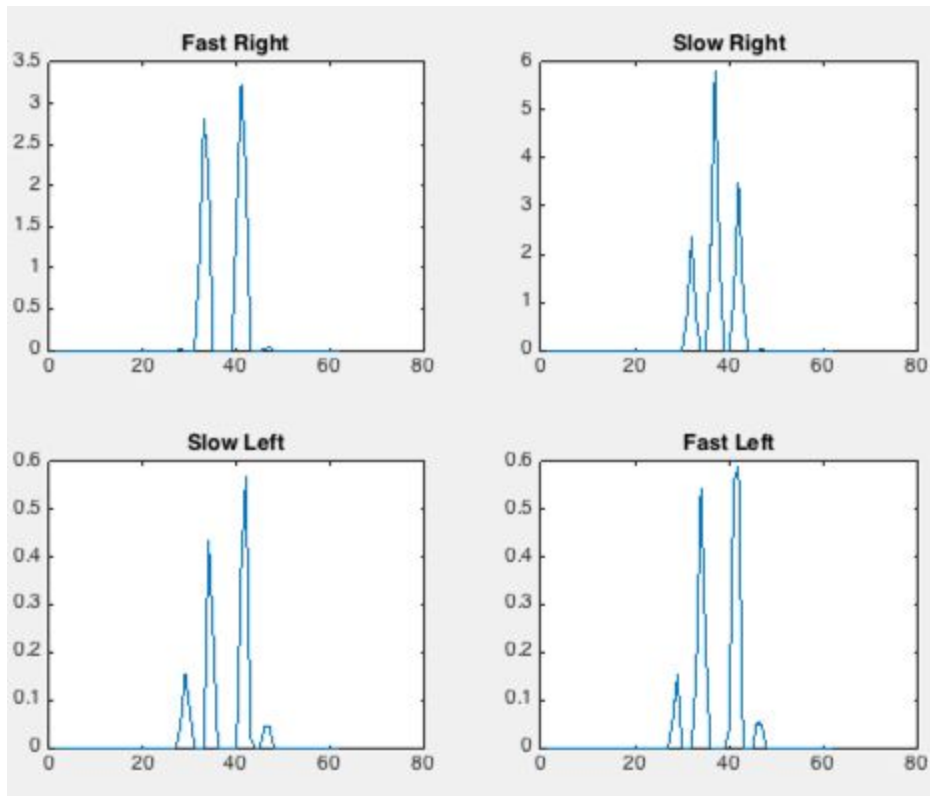
This gives a great showing of the strengths these filters have. Looking at the scale it is evident that the right moving filters perform **much** better than the left moving filters, which show their effectiveness at capturing direction of motion.

Classification

By identifying which filters pop up the most and using that as our features, the classifier is able to associate patterns in motion as well as spatial which grants further insight for the video format, and performs much better than simple spatial filters.

Spatio-temporal classification: ~80-95% depending on shuffle
Spatio classification: ~55-60% depending on shuffle
Spatio and Spatio-Temporal (combined features): 50-60% depending on shuffle