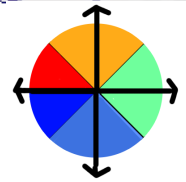# REU: Week 8

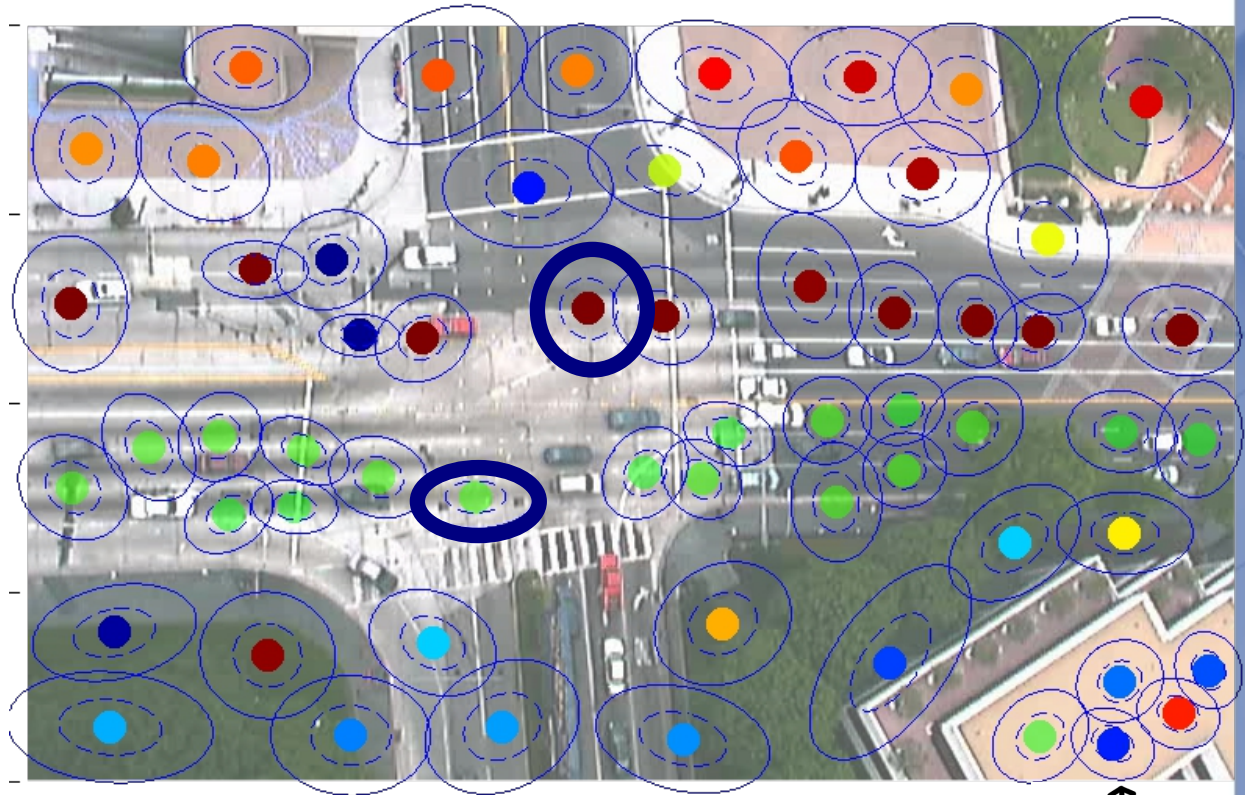## Scene Motion Patterns from Optical Flow

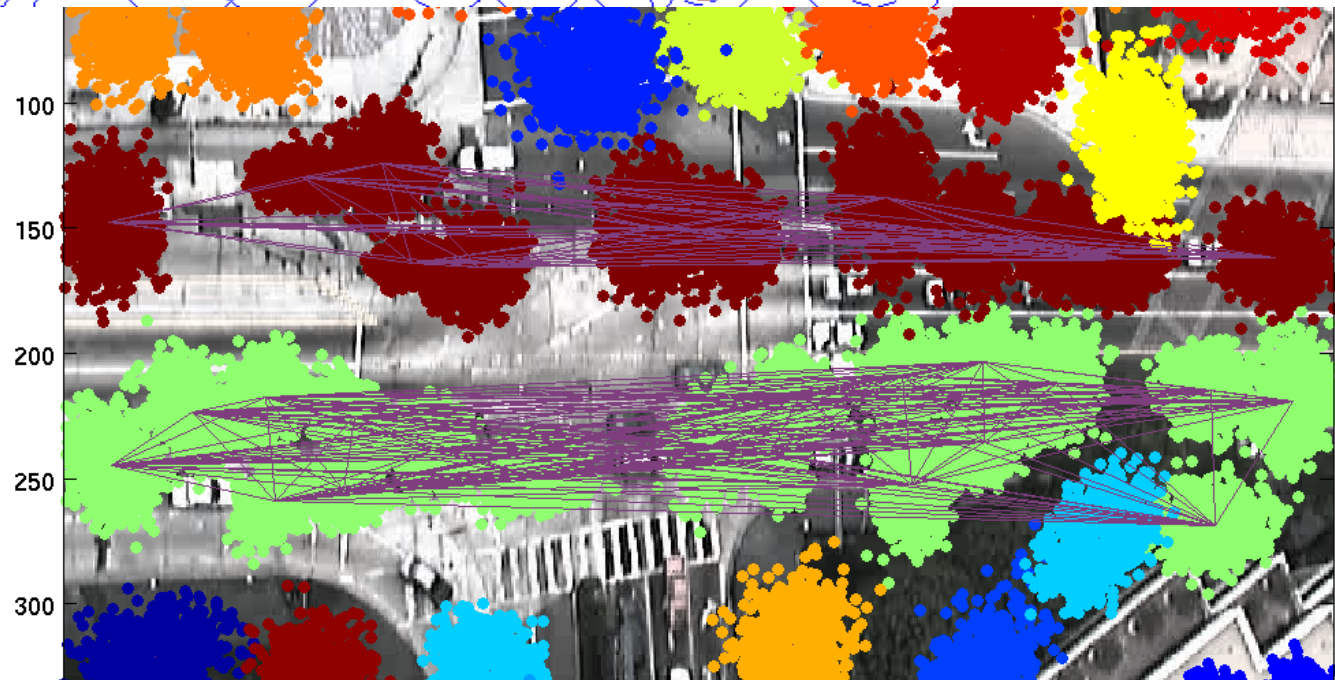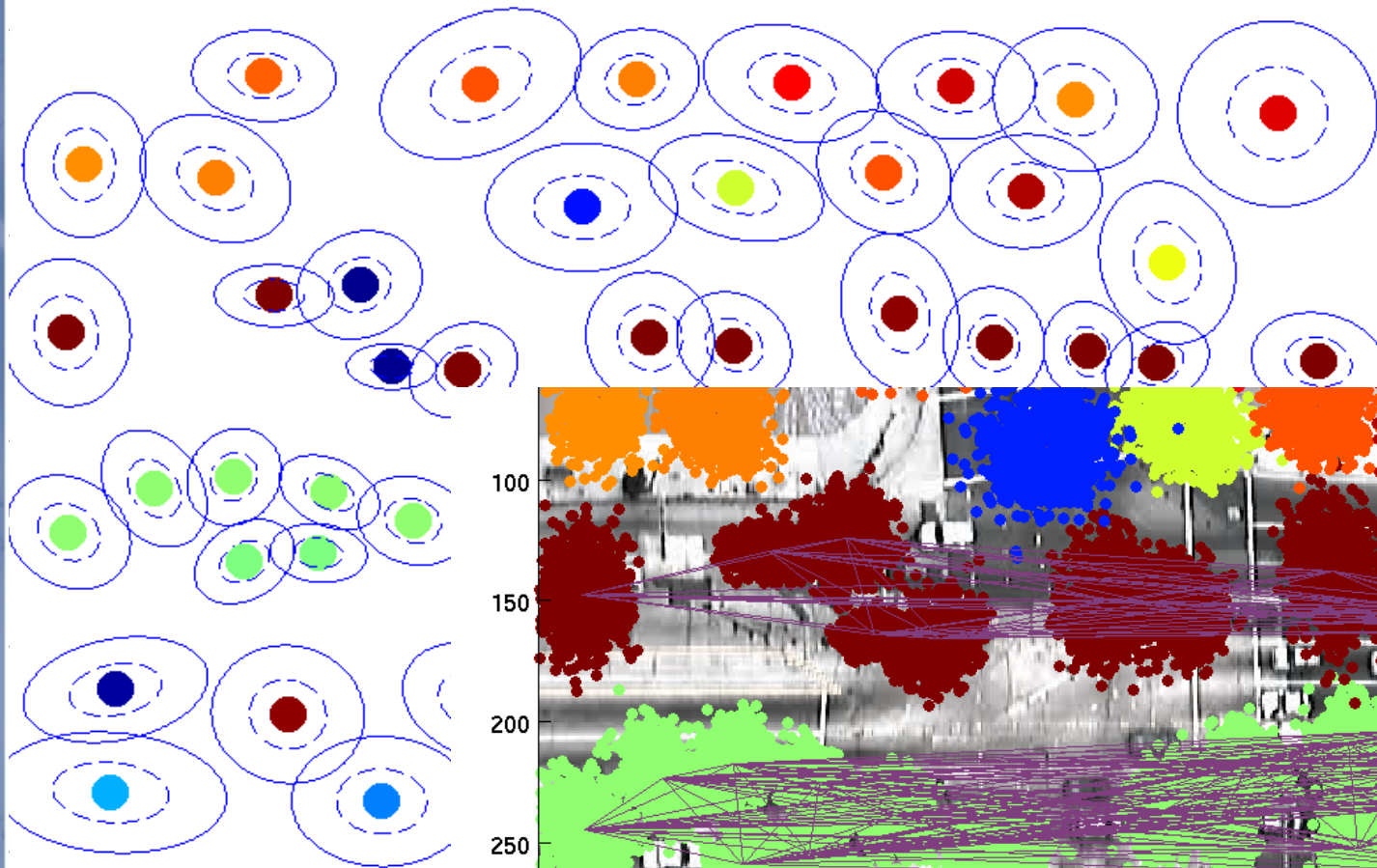## Lance Hartung

This week

- Problems with Kernel Density Estimation
    - Requires all data points to be saved
    - 11,000 frames, >30,000 data points per frame

- Possible hierarchical model

    1. Short clip of frames (10 frames)

    2. Related motion over multiple clips (making a turn, going straight)
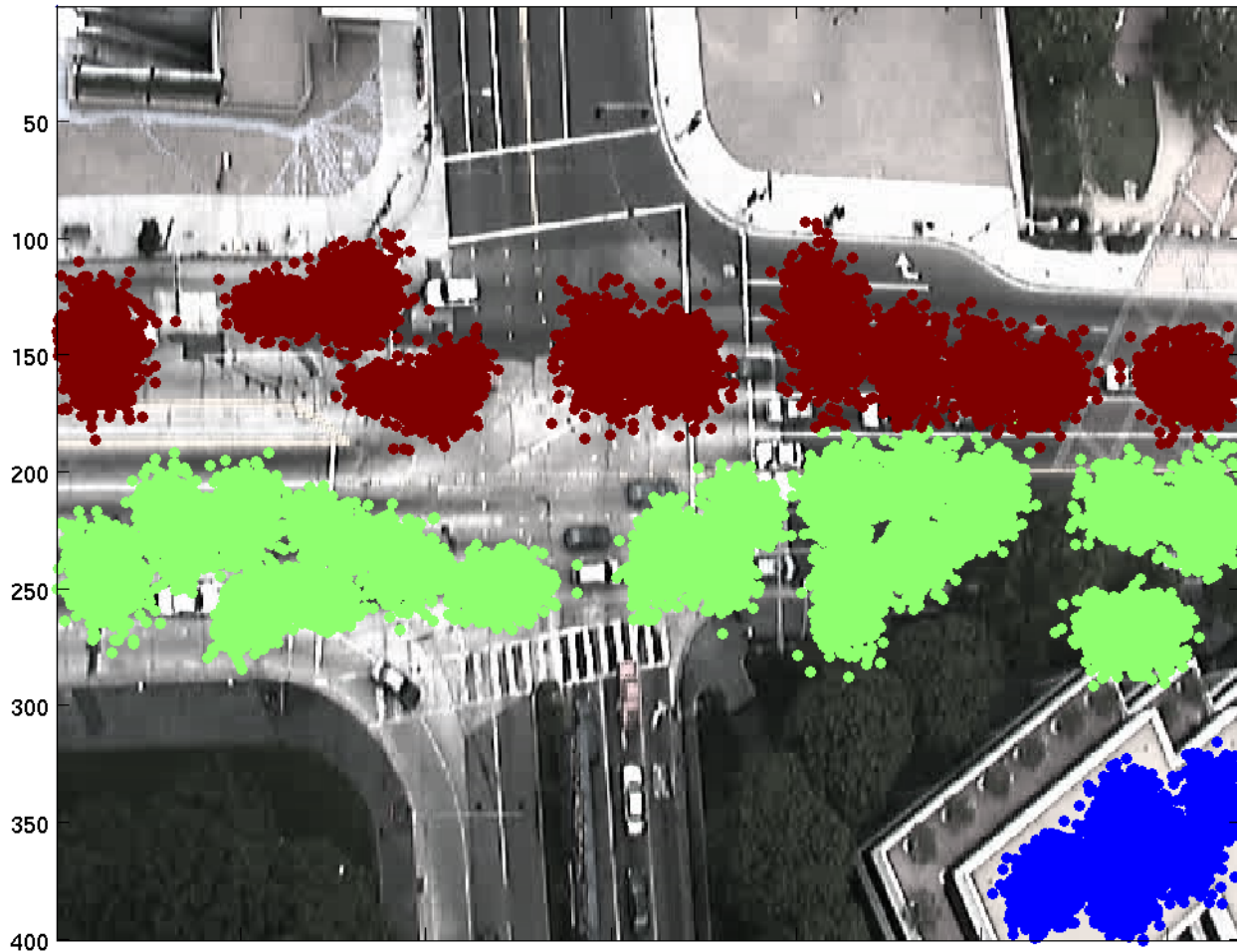
    3. Periodic motion patterns

Clustering

- (x,y,u,v) points from 10 frames
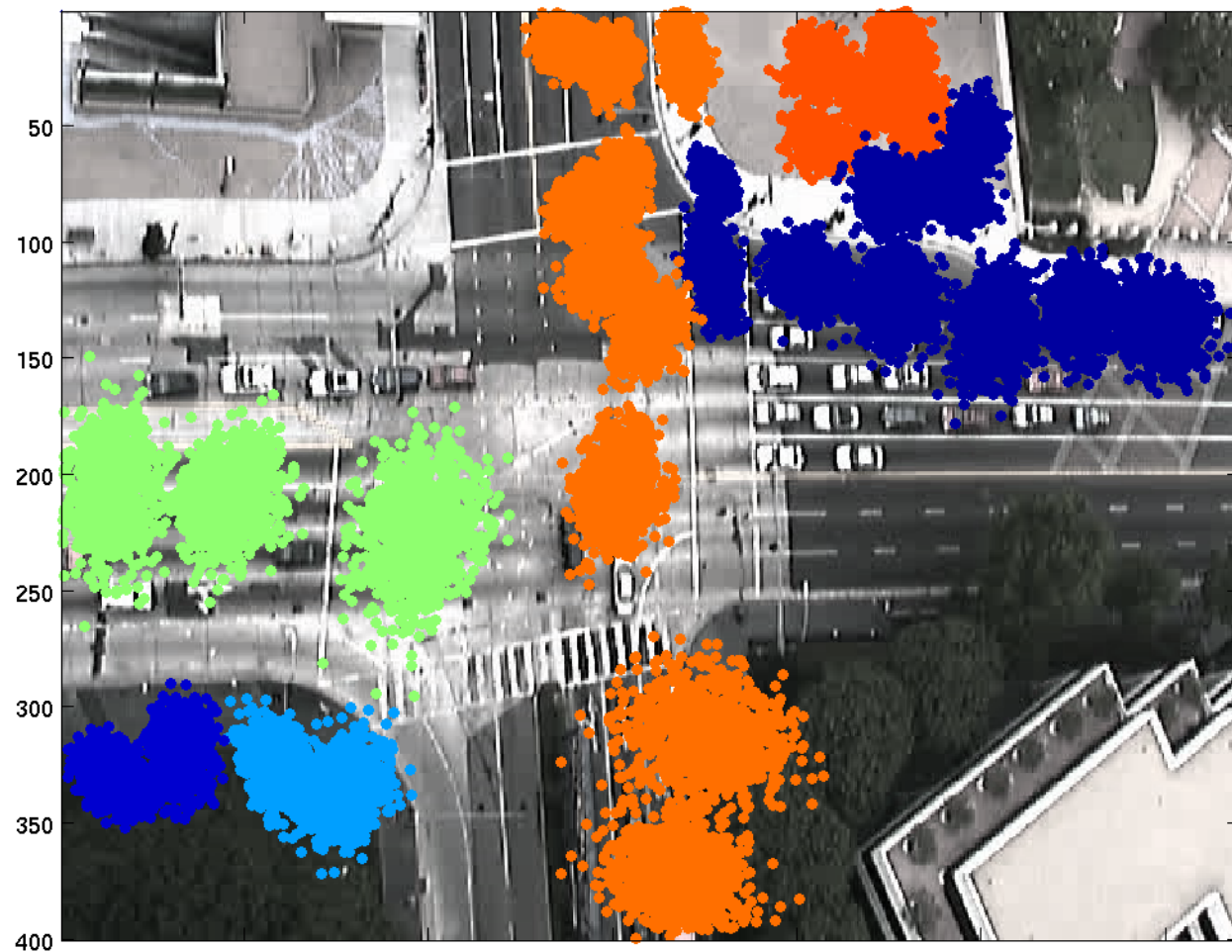
- K-means

- Ellipses – spatial extent of cluster (2 SD)

Finding similar clusters

Horizontal example

Vertical example

Thoughts

- Low-level clustering
    - Results appear meaningful
    - Simpler representation
- Next step in hierarchical model
    - Find consistent motions over consecutive time clips (not hard)
    - Identify these as recurring patterns (hard)