WEEK 5 REPORT

Sports Video Summarization:

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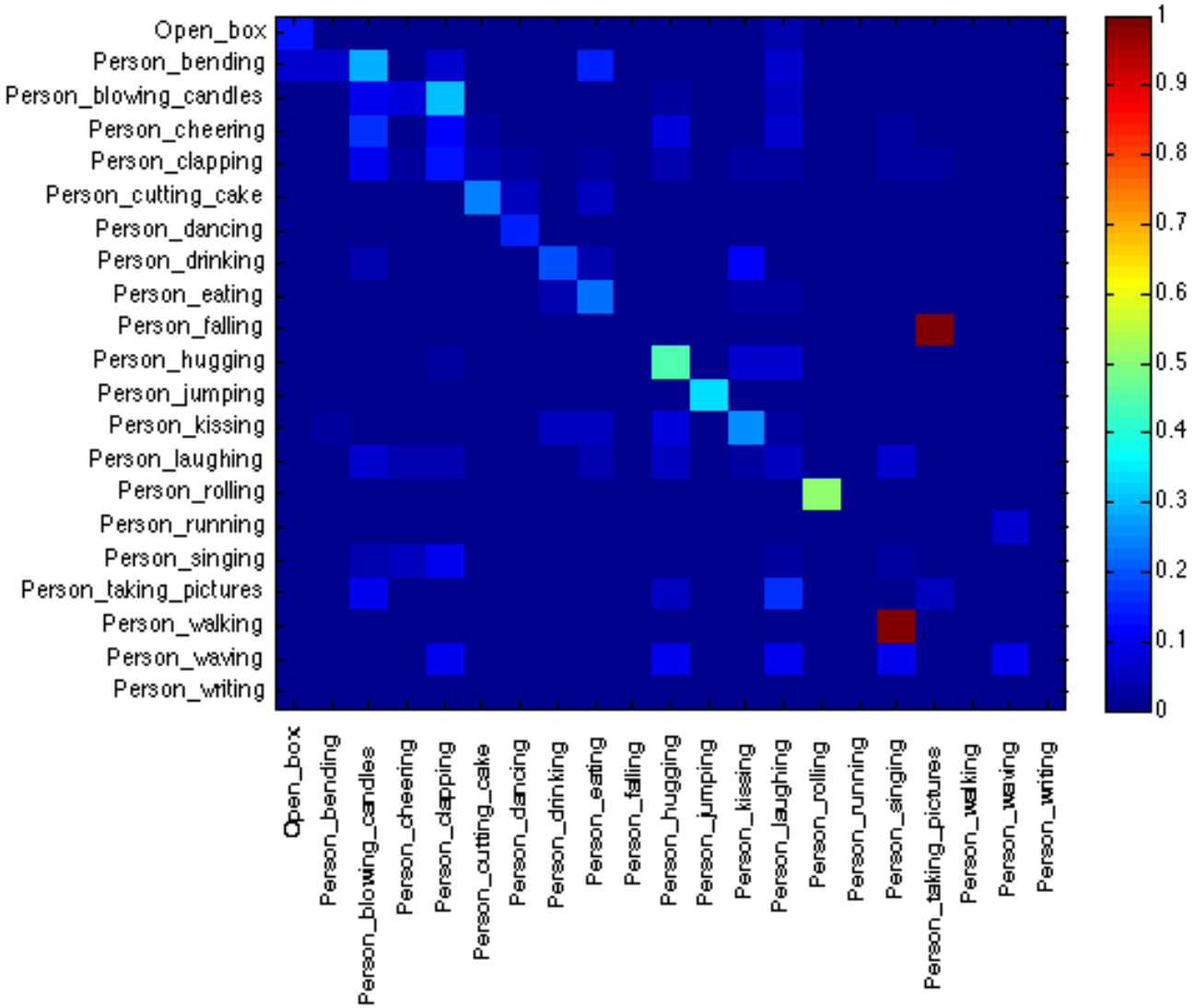
June 26, 2013

Aladdin Dataset

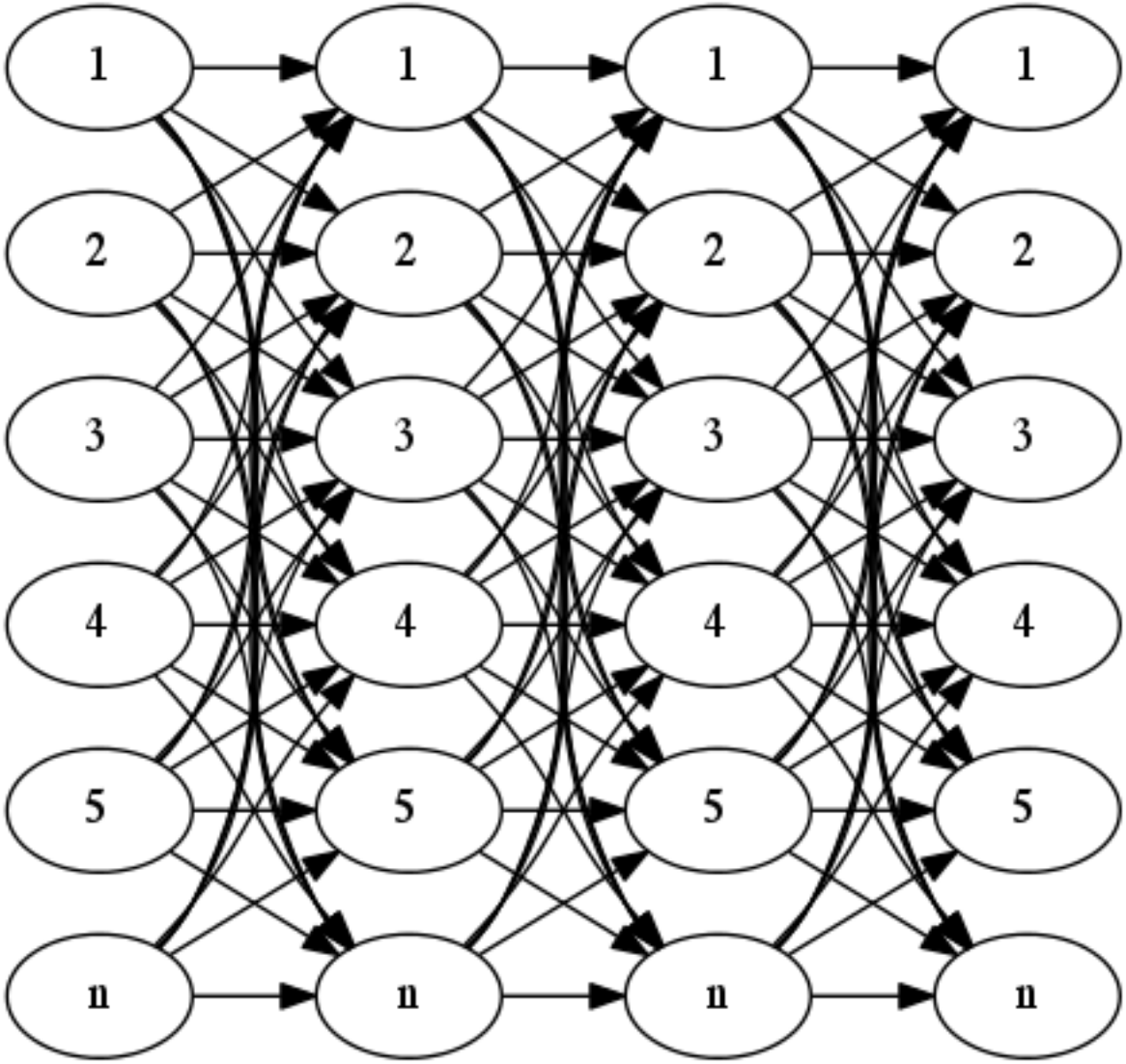
- Testing out using causality matrix to increase accuracy of action recognition

- Accuracy
  - 60% over 163 videos in event 6 – birthday party
    - Compared with 72% accuracy without
  - Not accounting for false positives
  - Not as strong of a relationship between events in a birthday party as in a soccer game
  - A birthday part is more of a sequence of non-repeated actions
  - Not many concepts for each video which effects the ability to form a useful causality matrix

Causality Matrix



Graph Representation



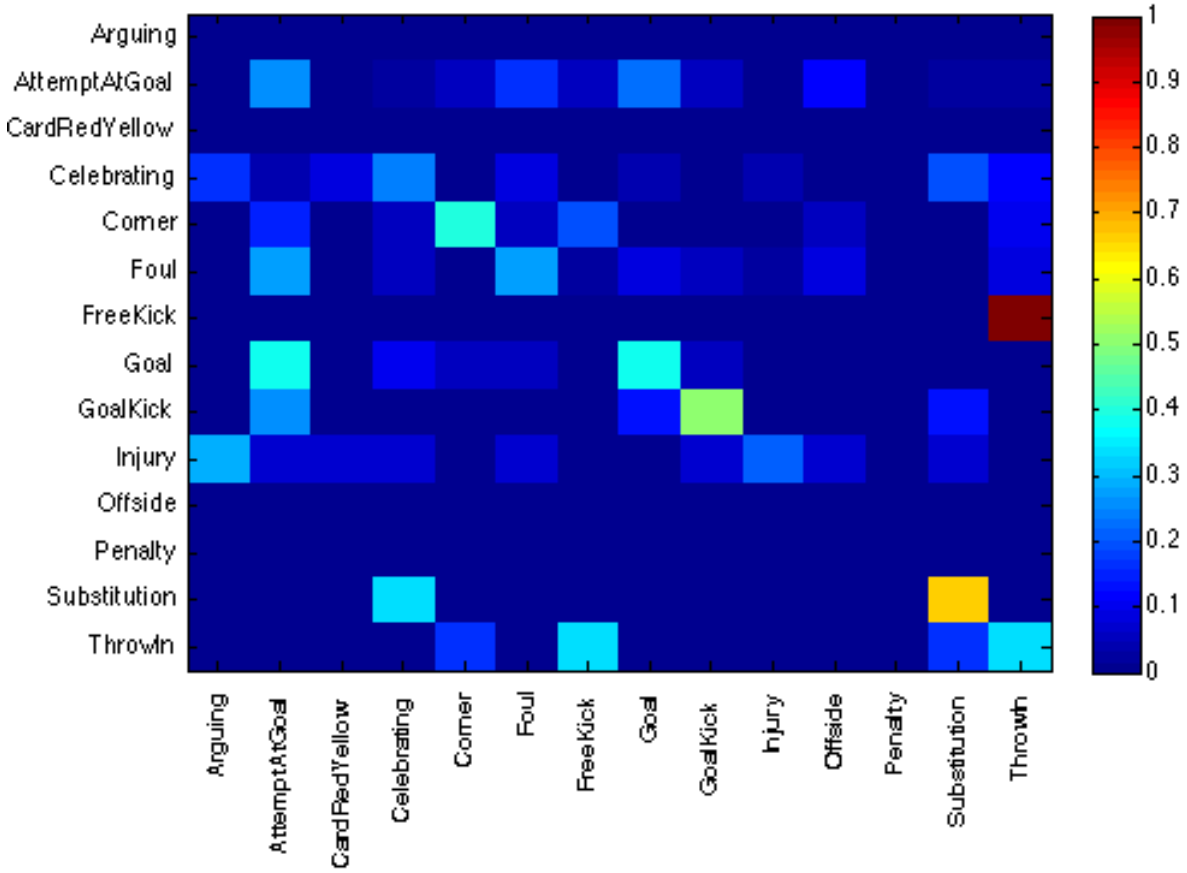
- Each column represents evenly spaced segments of the entire video
- There are *n* nodes in each column corresponding to *n* actions
- Each node is the probability of that action occurring in that segment
- The edges between nodes come from the causality matrix and are the probabilities that one action leads to the next

Graph Representation

- Currently using the sum of the probabilities to determine the max flow through the graph by maximizing this sum
- Looking into other options for computing this max flow to get better accuracy
- Adding a node to represent a non-action

Soccer Dataset

- Confusion Matrix



Soccer Dataset

- Accuracy
  - Getting 90-95% accuracy across 14 different one vs. all SVM classifiers
  - Seems unrealistically high

Short Term Plan

- Look into combining features
  - We have MBH and STIP features for each clip
- Looking into different ways to represent the graph
  - Hidden Markov Model
  - CRF
- Looking into better algorithms for computing the max flow

Long Term Plan

- Add Audio features
- Use shot detection/classification and localization
- Add these to our current methods to better improve accuracy