Machine Learning

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Literature Survey

Learning Realistic Human Actions from Movies
Ivan Laptev et al.

- Timing Information
  - From Subtitles to Scripts
- Use ML based Text Classifier
  - Determine if a given class is present
  - Get STIPs
- Build Vocalbulary
  - HoG and HoF features
  - Form Descriptors
- SVM

Learning Realistic Human Actions from Movies
Ivan Laptev et al.

1. Previous Attempts in Simplified Settings
2. Supervised Learning
3. Possible to Work with Long Videos / Movies

Improving Video Activity Recognition
Using Object Recognition and Text Mining. Tanvi S. Motwani and Raymond J. Mooney

- Text Mining to Determine Classes
    - Get Verbs - Part of Speech Tagger
    - Stem the Verbs
    - Cluster Similar Verbs using WordNet
    - These Clusters form Classes
- Initial Probability Distribution
    - From STIPs, HoG and HoF, form Vocabulary
    - Train a Standard Video based Activity Classifier

Improving Video Activity Recognition
Using Object Recognition and Text Mining. Tanvi S. Motwani and Raymond J. Mooney

So, till now, we have

- Determined Classes
- Got Initial Probability Distribution

Now,

- Detect Objects
- Correlations between Activities and Objects
  - From raw text, get occurrences and co-ocurrences count
- Find $P(Activity|Object)$ thus find $P(Activity|Features)$
- Initial Probabilities vs Combined Probabities

Latent Topic Model-Based Group Activity Discovery
T.A. Faruquie, S. Banerjee, P. Kalra

- Form Vocabulary
- Find Distribution of an Activity over Clips
- Activities having Similar Distributions are Group Activities

Idea of This Semester Work

The Best way to have a good idea is to have many ideas.
- **Linus Pauling**

1. Object Detection using Scene Information
2. Use Text to Detect Objects
3. Improve Object Detector Using Feedback

References I

Learning Realistic Human Actions From Movies
Ivan Laptev, Marcin Marszalek, Cordelia Schmid, Benjamin
Rozenfeld *Proc. CVPR, 2008*.

Improving Video Activity Recognition Using Object Recognition
and Text Mining
Tanvi S. Motwani and Raymond J. Mooney *Proc. ECAI-2012*.

Latent Topic Model-based Group Activity Discovery
T.A. Faruquie, S. Banerjee, P. Kalra *Vis Comput (2011)
27:1071-1082*.