

Homework #3

a) The summary of paper

STRUCTURE ANALYSIS OF SOCCER VIDEO WITH DOMAIN KNOWLEDGE AND HIDDEN MARKOV MODELS

The paper presents statistical tech for parsing the structure of produced soccer programs.

1) Advantages:

- 1 Well consider about the rules of real world soccer. And reasonable definition of the state, *play* and *break*.
- 2 The system achieves the promising classification accuracy 83.5% with light-weight computation on feature extraction and model inference.
- 3 Use the well known knowledge and technique, such as Hidden Markov Model, Maximum Likelihood Segmentation and Dynamic Programming. It is easier for reader to obtain the background knowledge.

2) Room for improvement:

- 1 May have other relevant low-level features that might provide complementary information and may help improve performance, such as camera motion, edge, or audio features.
- 2 Higher-level object detectors, such as goal, fight or beauty spectator detection.

b) The summary of paper

A STATISTICAL FRAMEWORK FOR FUSING MID-LEVEL PERCEPTUAL FEATURES IN NEWS STORY SEGMENTATION

The paper presents a general statistical frame work, called *exponential model* or *maximum entropy model*, that can systematically select the most significant mid-level features of various types.

1) Advantages:

- 1 Multiple language support, and experiment with Taiwanese and achieved a promising performance, that is, 90% F1 measure, 87% precision and 94% recall.
- 2 The capability in automatic selection of salient features.
- 3 Mix mid-level features with visual, audio and semantic cues with a good performance.

2) Room for improvement:

- 1 Full of mathematic and probability, hard for trace the physical meaning of those expression.
- 2 How about fuse with low-level features for improve the precision rate.