# Social Interactions : A First person Perspective [ Fathi et al CVPR 2012 ]

**Problem:** Detecting recognizing social interactions [ dialogue, discussion, monologue, walk dialogue, walk discussion ]

**Setup:**

* Head mounted cameras (first person views / egocentric view)
* 8 persons
* 3 days in amusement park (42 hours)

**Advantage:** First person camera always captures where person is attending

**Building blocks of the algorithm**

1. Location of faces

* view angle from camera
* distance from camera

2. Model for Attention

Markov Random field with graph of face locations

* Unary potential terms
  + Gaussian function: possibility of fi looking at location l
  + Sigmoid term : threshold the distance between faces- avoid face looking at itself
  + Bias faces to look at faces rather than objects
* Pairwise potentials
  + Bias faces to look at same location in the scene

**Method**

Features to capture social interation:

1. Location of faces around first person
2. Roles based on patterns of attention
   1. Number of faces looking at person x
   2. Whether first person looks at person x
   3. Mutual attention between first person and x
   4. Number of faces looking at where x is attending
3. First person head movement (based on optical flow)

Social interactions are inferred from the temporal patterns of the above features using Hidden Conditional Random Field

**Results**

* ROC curves and confusion matrix presented, which seems to be doing well.
* This is first work and introduces new dataset, so comparison with other methods is not presented
* Also show how social network can be built using this method.