### iCoseg: Interactive Cosegmentation with Intelligent Scribble Guidance

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**CMU-Cornell iCoseg Dataset**
- **Largest co-segmentation dataset in literature**
- **CMU-Cornell iCoseg:**
  - 38 groups
  - 643 images
  - 17 images

**Previous Works**
- ~30 groups
- ~40 images

### Unsupervised Cosegmentation
- Prior unsupervised cosegmentation works
  - Pairs of images to perform cosegmentation
  - Foreground same, backgrounds unrelated
- In this work: Groups of images where foreground and background are both very similar

### Our System
- HP TouchSmart
- Interface (iScribble) publicly available!

### iCoseg
- Cannot analyze each cut-out to provide more scribbles

### iCoseg: Guiding user scribbles
- Cues used to guide the user scribbles
  - Image cues: Segment Size, Codebook Distribution
  - GC uncertainty, Dist. transform, Intervening contours

### Machine Experiments
- Performance of cues
  - Logistic Regression
  - Recommendation Map

### User Study
- Random scribbling (Exp. 1)
- Exhaustive examination (Exp. 2)
- iCoseg (Exp. 3)

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**Energy functions per image**

\[ E(X,Y,A) = \sum_{i=1}^{n} E_i(X_i,Y_i,A_i) + \lambda \sum_{(i,j) \in E(G)} E_{ij}(X_i,Y_j,A_i) \]

- Basic setup:
  - Scribble image(s)
  - Learn Group Appearance Models
  - Set up energy minimization problem
  - Minimize independent energies via Graph-cut

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**http://chenlab.ece.cornell.edu/projects/touch-coseg/**