7/10
One-shot Recognition

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Results so far

- One-shot classification
  - Best results still ~22% accuracy
  - Uses all of the features
  - Chance accuracy = 10%
- One-shot clustering
  - Best results ~30% accuracy
  - Uses just the rgsift feature

This Week

- Ran a lot of benchmark tests
  - Clustering evaluation method
- Averaged training example
  - One-shot classification test
  - 1 training example = average of all examples for that class
- Lampert's performance on our evaluation method
- Finished training/evaluating SVM's for discriminative attributes

Some Results

- Clustering evaluation
  - Identity transformation on testing data
    - ~19.78% accuracy
  - Identity transformation on training data
    - ~7.776% accuracy
  - Our logistic projection on testing data
    - ~29.66% accuracy
  - Our logistic projection on training data
    - ~15.05% accuracy

Some Results

- Averaged training example
  - Our logistic projection to 10 dimensions
    - ~35.5% accuracy
  - Our logistic projection to 85 dimensions
    - ~39.75% accuracy
  - Identity transformation
    - ~49.38% accuracy
- Animals in testing class cluster together very well

Some Results

- Lampert's performance
  - Used outputs from his SVM's and evaluated
  - One-shot classification test
    - ~30.75% accuracy
  - One-shot clustering test
    - ~37.04% accuracy
- What does this tell us?
  - Possible to do up to these numbers on one-shot problem
  - Noise is coming from previous steps, and not one-shot evaluation

This Week

- Discriminative Attributes
  - Take all possible pairs of 40 training classes
  - 40 choose 2 = 780 total
  - Train SVM's to distinguish between every pair
  - "Is it more like a cat, or more like a dog?"
- Results
  - ~20% accuracy
  - Uses just the rgsift feature
  - Uses Chi-squared Kernels, Platt scaling

Next Steps

- Aim for Lampert's accuracy
  - We know now that our accuracies are not low because of one-shot evaluation
- Figure out where the noise is coming from in our SVM's
  - Not using all of the images
- Check code for errors and bugs