ADHD Classification

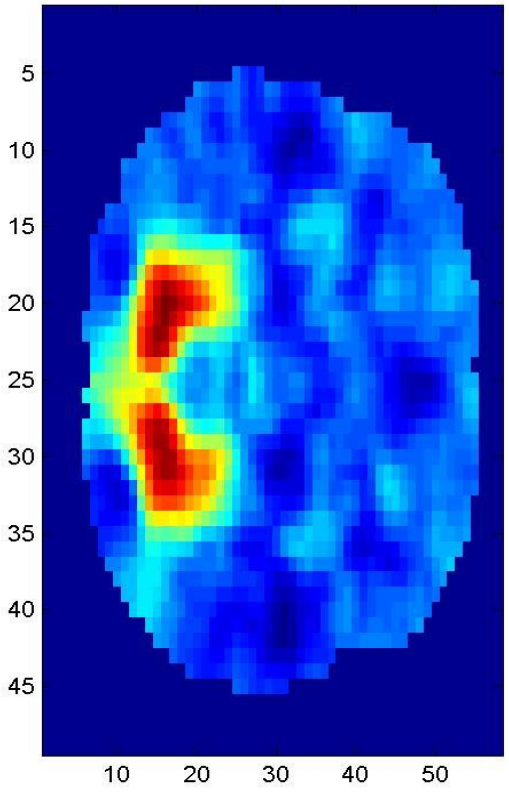
Amy Ko

Week 6

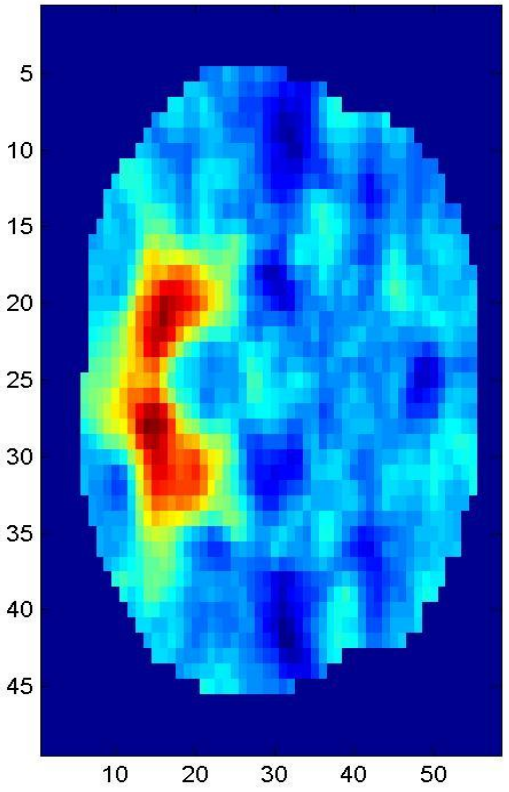
This Week

- 10 3-D correlation maps for each brain
  - 1 seed region vs. all other voxels
- Find regions with max differences
  - Max(avgNormal Slice– avgADHDSlice)
  - Min(Correlation(avgNormalSlice, avgADHDSlice))
- Prune results to those that are common across all 3 datasets

Average Normal



Average ADHD



Experiments

- Find smaller distance
  - sum(avgNormal Slice– testBrainSlice)
  - sum(avgADHDSlice – testBrainSlice)
  - Results: all classify as normal!! ☹
- Use distance maps of the maxDiff slice as feature vectors
  - Distance map: (avgADHD – adhdBrain) or (avgNormal – normalBrain)
  - Results: 65%
- Use original correlation maps of the maxDiff slice as feature vectors
  - Results: 69%

More Experiments

- Multiple SVM models
  - Take *n* "good" slices
  - Train SVM & generate *n* different models
  - Given test brain, get *n* classifications, *n* confidence values
  - Classify test brain accordingly
    - highest confidence value or
    - sum(confidenceADHD) vs. sum(confidenceNormal)
  - Result: same as using 1 SVM
- Multiple LDA models
  - Result: same as using 1 LDA

Next Week

- Extract better regions
  - Extend to other datasets
  - Differences that we can physically see
- Concatenate multiple “good” slices