Week 3

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Project of Choice

- Crowd counting using texture repetition
- Most crowd counting currently use either densities or object (human) counting
- We want to see if there are textons which represent a person or part of a person
- If we can find these textons, we can then go about counting the crowd
Readings

Template Matching

- Given some image and a template, find all instances of template inside image.
- Sum of absolute distance to determine matches
Result

1,891 matches
Result

480 matches
Issues

- Perspective causes misses on potential matches near back
- Use of projective transform on image improved matching
- False positives
Transformed Image
(same template as before)
Result

2,298 matches
Result

683 matches
Crowd Synthesis

- Wrote a quick program to generate rudimentary crowd
- Could not find existing high dense crowd counts
- Can be improved but will no longer work on it since it is not required to solve problem
Synthesised Crowd
Learning Textons

- Given an image, take multiple patches from random location
- Generate filter responses for each patch and create a vector
- Cluster vectors via K-Means
- Center points are the textons
Textons, where $k = 50$
Recreation of image via textons

\[ k = 10 \]
Next Steps

- Need to create textons which represent a single person in a crowd or parts of person
- To do this, we need to find preprocessing steps which facilitate creation of these textons
- Currently applying edge detection, image segmentation, DoG, LoG, etc... in order to find useful patterns or information