What is Perceptual Image Hashing?

- Robust similarity comparison of images
- Reduce the content of an image into a hash
- Distance between hashes is difference in visual content
Algorithms

- Compare 6 algorithms
  - average
  - gradient
  - Discrete Cosine Transform
  - K-means
  - Block Truncation Coding
  - Wave Atom (if time allows)

- Analyze sensitivity to different image manipulations (blurring/cropping/etc.)
AHash (average)

- Grayscale and resize image to 8x8
- Compare intensity of each pixel with mean
DHash (gradient)

- Grayscale and resize image to 9x8
- Compare each pixel intensity to its left adjacent pixel
PHash (DCT)

- Grayscale and resize image to 32x32
- Discrete Cosine Transform
- Compare topleft 8x8 with mean intensity of top 8x8
K-Means

- Break image into K sections
- Find histogram of each section
- Compare counts between bins
Block Truncation Code

- Break down image into blocks
- Find Lower and Higher mean of blocks
- Compare Lower and Higher means within a threshold
Preliminary Results

- Prelim horizontal motion blur sensitivity