

# Final Exam

- In class: Wed Dec 11, 8:30-11:30am, Gates B12
- Close book
- **1-sided “cheat sheet” notes allowed on a standard 8.5”x11” paper**
- Everything we did in the lectures and PSs and PAs are fair game
- Important topics are...

# Mathematical foundations

- Basic linear algebra definitions
- Vector and matrix operations
- Special matrices
- Eigenvalues and Eigen vectors
- SVD
- matrix rank
- matrix transformations
- RANSAC

# Filters

- Fundamentals
- Linear Shift Invariant System
- Convolution
- Correlation
- Gradients
- Scale space

# Features

- Canny edge
- Harris corner
- DoG
- SIFT
- Optical flow
- Lucas-Kanade feature tracking

# Camera models

- Pinhole camera geometry
- Thin lens
- Orthographic and weak perspective
- Intrinsic and Extrinsic parameters
- Stereopsis
- Epipolar geometry
- Rectification

# Clustering and Segmentation

- The Gestalt theories
- K-means clustering
- Mean-shift algorithm
- Hierarchical agglomerative clustering

# Recognition

- Definitions of object recognition
- Invariance issues
- kNN
- PCA and eigenfaces