Colorado School of Mines

Computer Vision

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CSCI 508 / EENG 508
Advanced Topics in Perception and Computer Vision

Professor Bill Hoff
Topics from *Introduction to Computer Vision*  
(CSCI 507 / EENG 507)  

• Image formation, 3D-2D projections, homographies  
• 3D coordinate transforms  
• 2D filtering, edge detection, thresholding, binary image processing, region descriptors  
• Template matching  
• SIFT feature detection and matching  
• Pose estimation from 3D-2D correspondences  
• Color models  
• Simple classifiers for pattern recognition
Topics for this course (CSCI 508 / EENG 508)

• Uncertainty estimation
• Model based recognition of 3D objects
• Multiview geometry – structure from motion, stereo
• Local features and descriptors
• Segmentation
• Appearance models
• Classifiers and recognition
• Indexing and category recognition
Examples

Structure from motion

Face detection

Appearance models

Segmentation

Location recognition

From Richard Szeliski, Computer Vision: Algorithms and Applications
This Week

• Today and next Tuesday
  – Review of computer vision topics
  – Probability and linear algebra

• Next Thursday
  – Uncertainty estimation