

ECE 516 / CS 532 Computer Vision

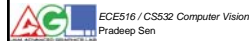
Class 16
April 7, 2008

Pradeep Sen
Advanced Graphics Lab



Announcements

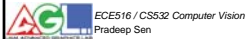
- HW3 is due on Wednesday



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Last time

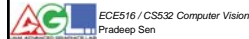
- Intro to camera models, projection, SVD



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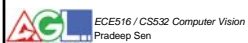
Today

- More on projection models



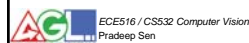
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The 2-D projective plane



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Conics



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Projective transformations

Removing projective distortion



source: Hartley and Zisserman

Removing projective distortion

- Computation of the rectifying transformation does not require knowledge of camera parameters or pose of the plane

Hierarchy of transformations

- Isometries
- Similarity transformations
- Affine transformations
- Projective transformations

Isometries

- Iso = same, metric = measure
- Invariants: length, angle and area

Similarity transforms

- Invariants: ratio of lengths, ratio of areas, angles, preserves shape

Affine transforms

- Invariants: parallel lines, ratio of lengths of parallel segments, ratio of areas, the line at infinity

Projective transformations

- Invariants: collinearity, concurrency

Reading

- Forsyth, Ch 3 and 10