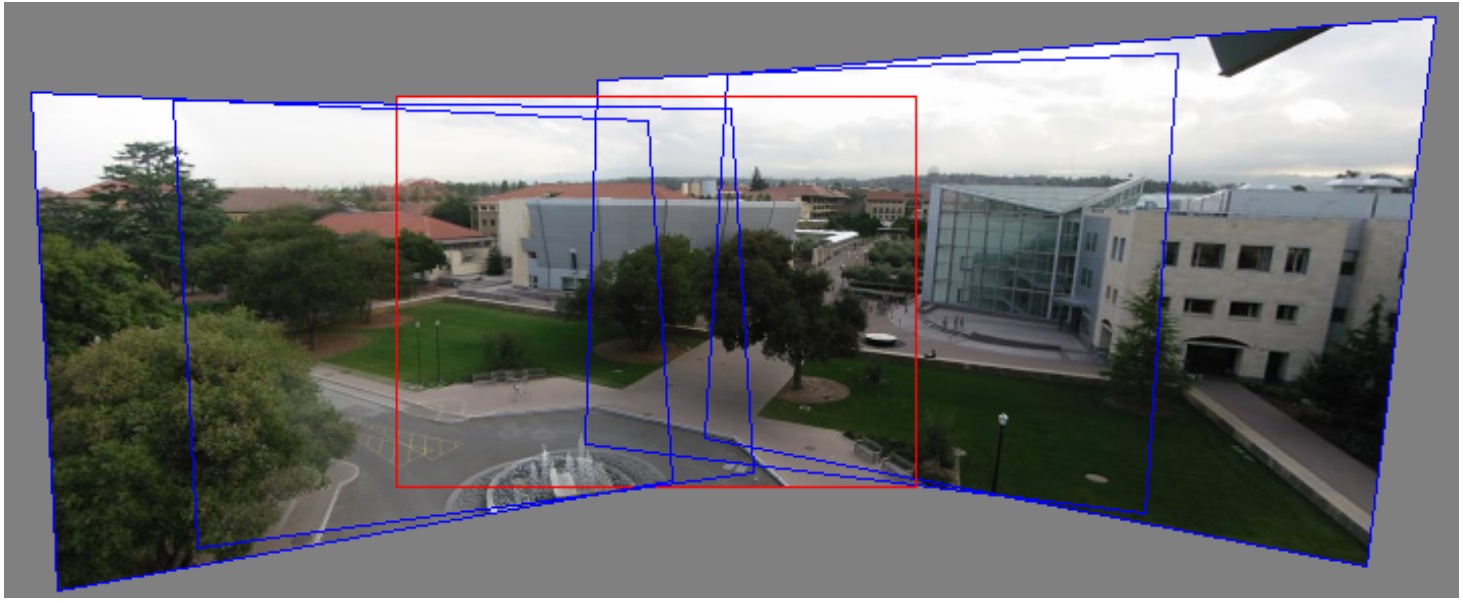
CSCI 497P/597P: Computer Vision



Lecture 17

Planar Panoramas:

Aligning, Warping, and Blending

Pinhole Camera Model

Announcements

- I updated the notes on last lecture's slides to be clearer about choosing *s*, the number of points to randomly fit a hypothesis model.

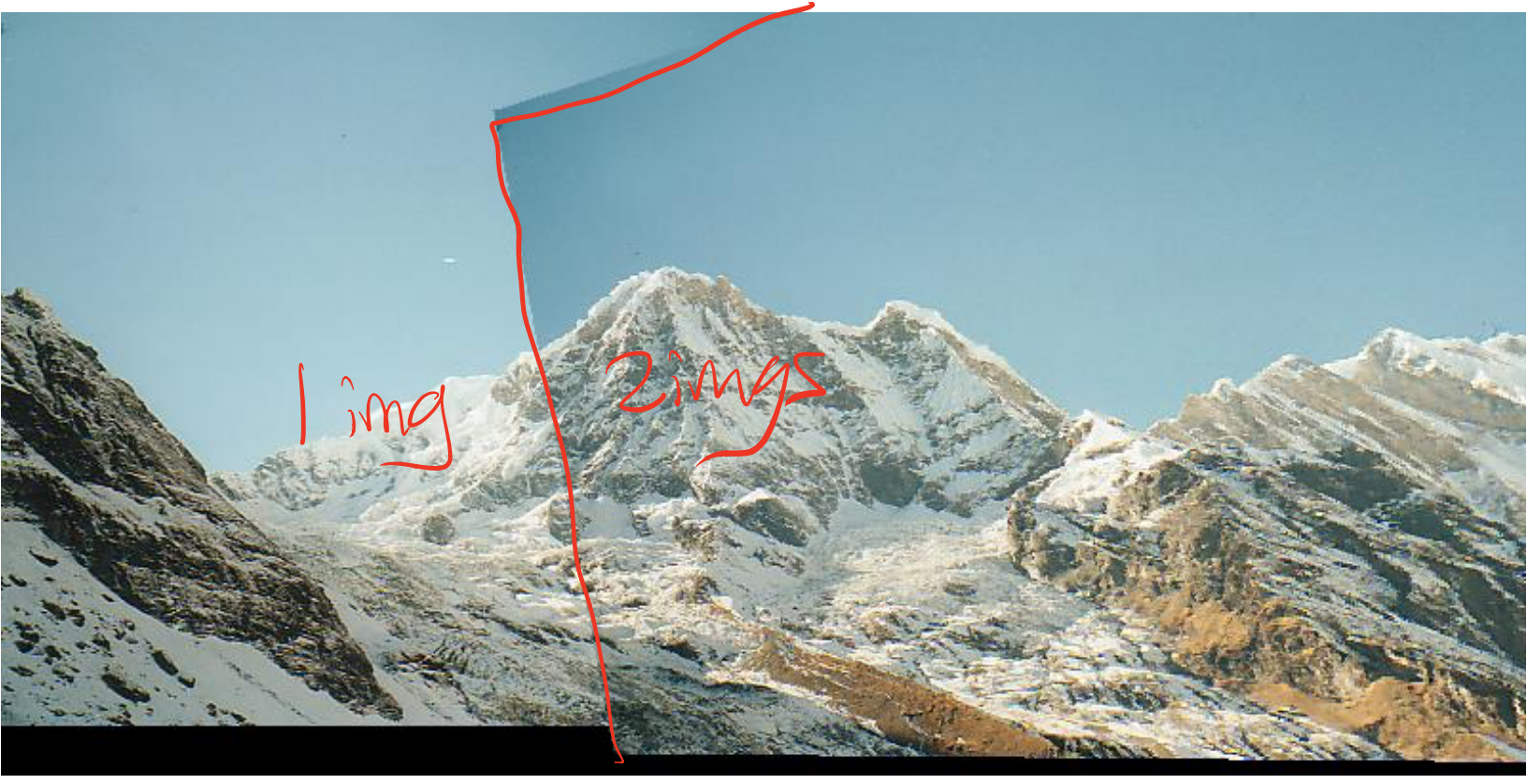
- P2: if you're working in pairs, see my announcement and the P2 writeup.
  Deadline to pair up is Wednesday night.

Goals

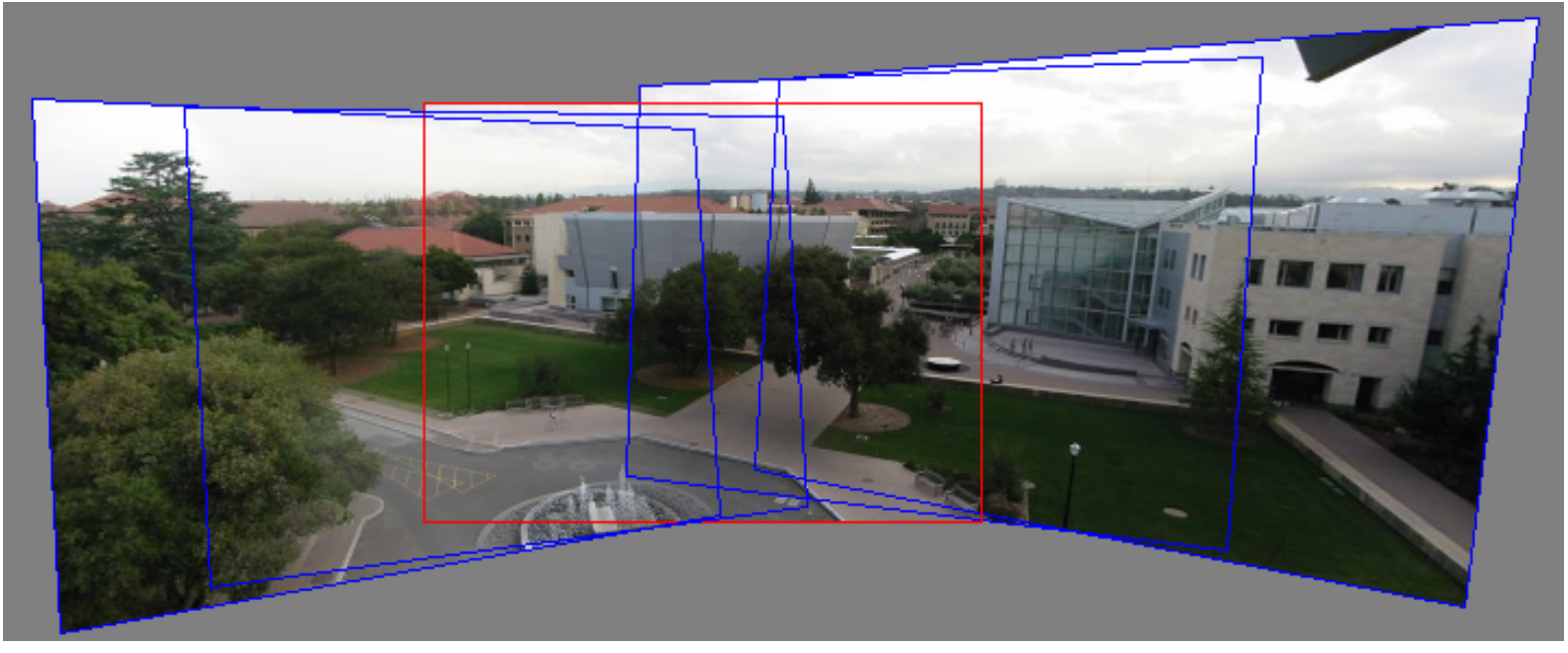
- Be prepared to implement P2, or, know how to:
  - Fit a homography with RANSAC given feature matches
  - Warp images onto common image plane
  - Collect pixel values in a single accumulator image
  - Blend the images so the seams aren't so obvious.
- Understand where images come from (under the pinhole camera model)

(goto other notes)

Blending: The problem

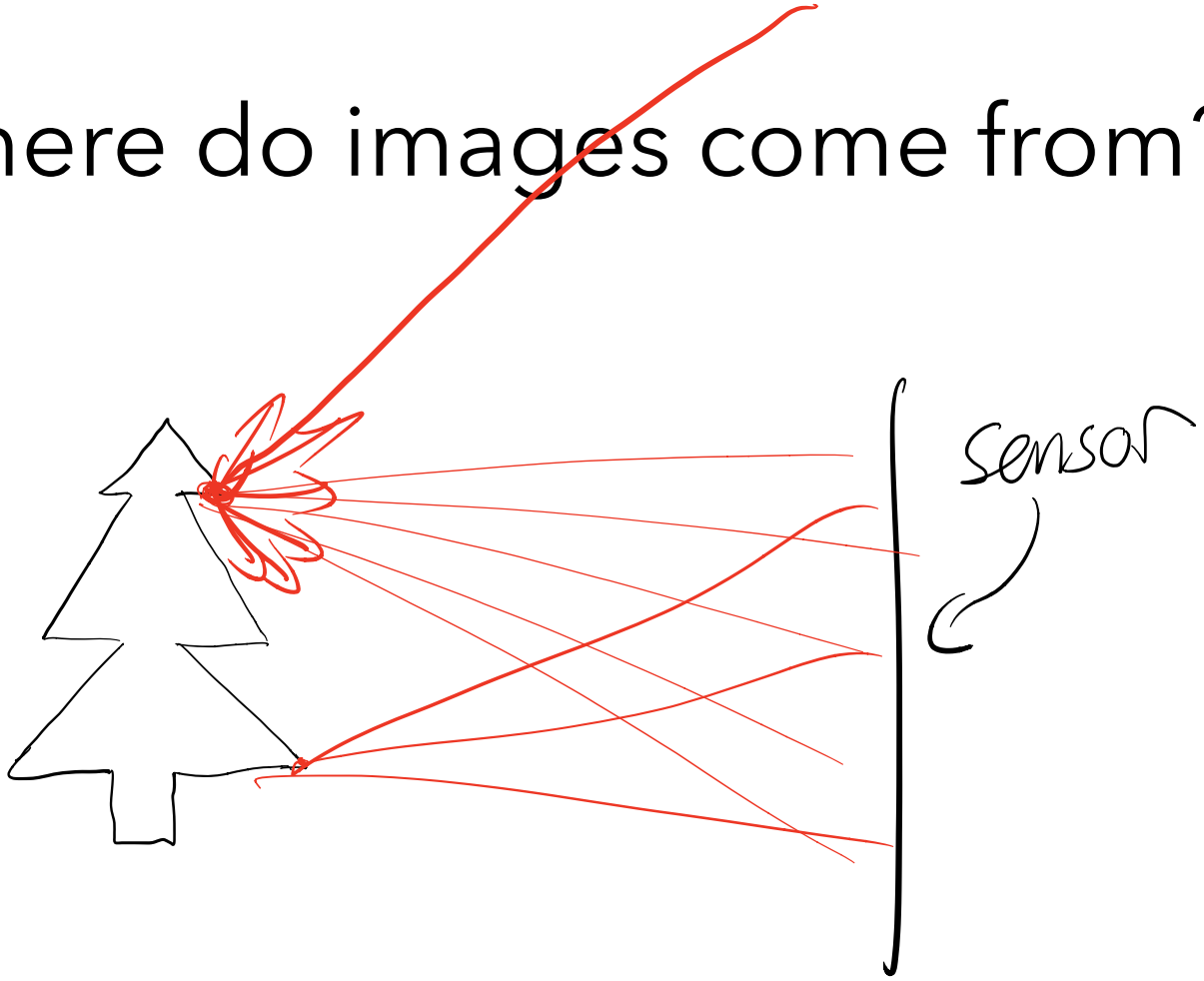


Can we make 360 panoramas?



To answer this, we need to know how these images came to be.
Why can we even make **any** panoramas with homographies?

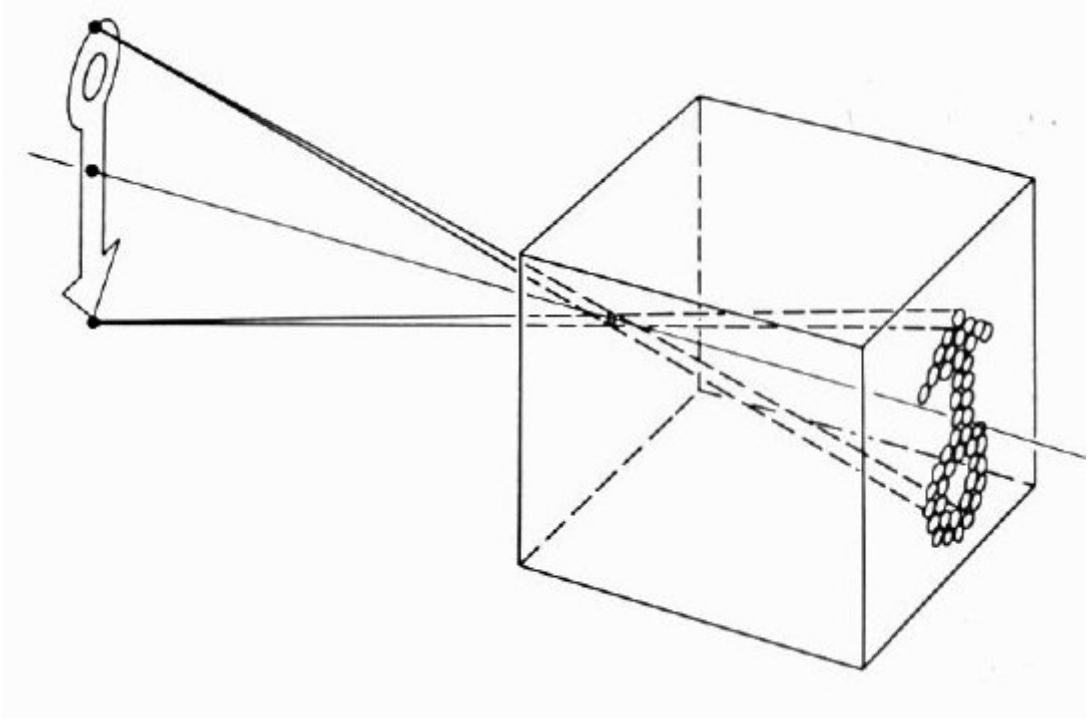
Where do images come from?



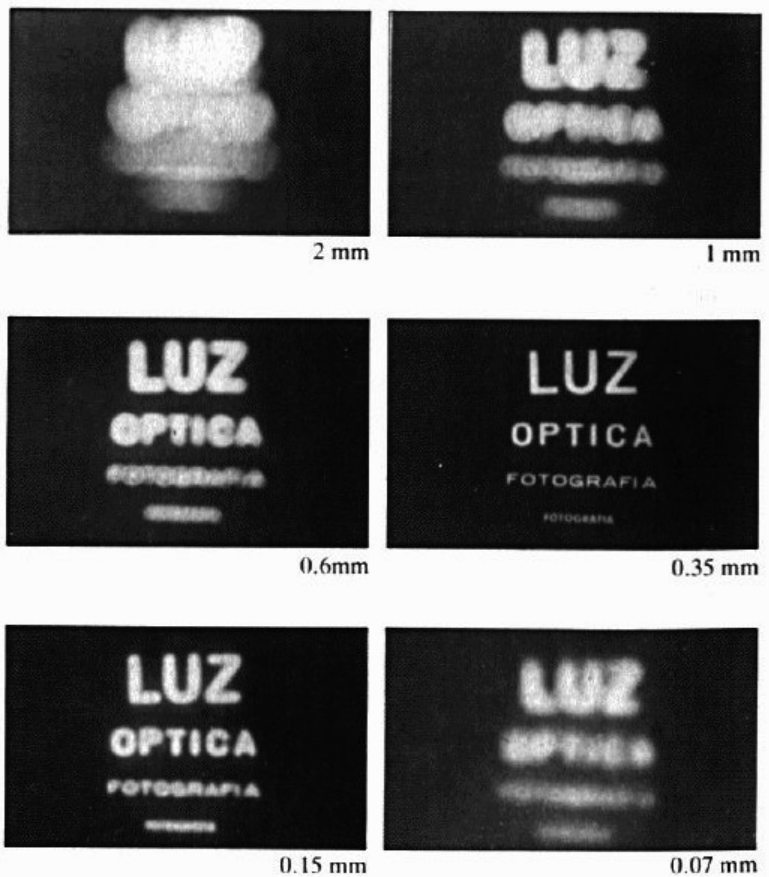
Camera MkI

MkII

Camera Obscura (pinhole camera)



The Effect of Pinhole Size

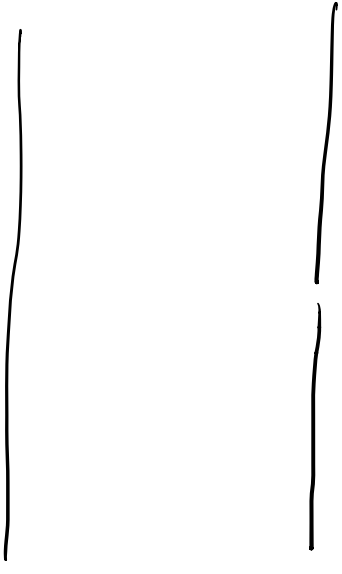


Aside: What about Lenses?

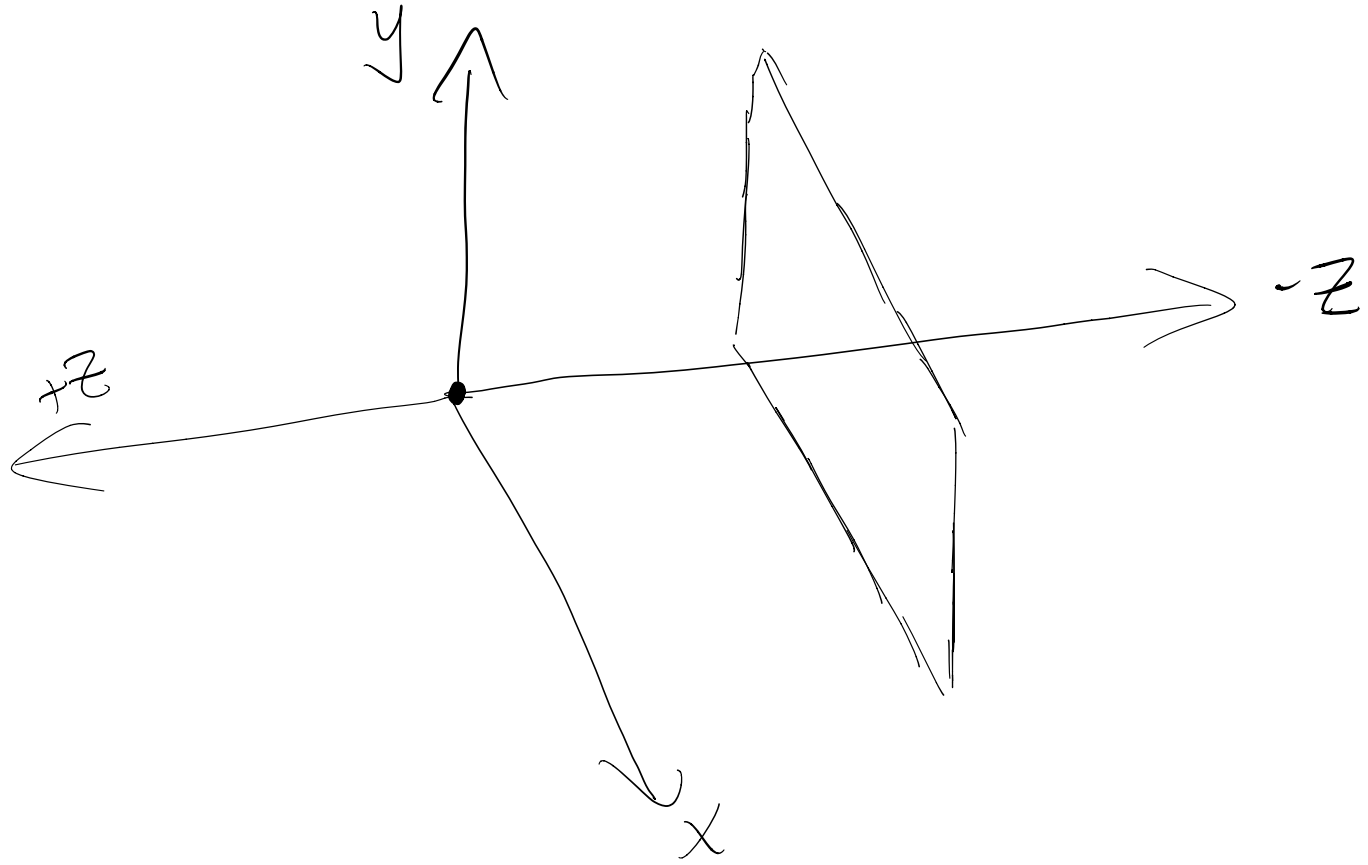

MAKE POVERTY HISTORY
JULIAN BEEVER
CoolOpticalIllusions.com

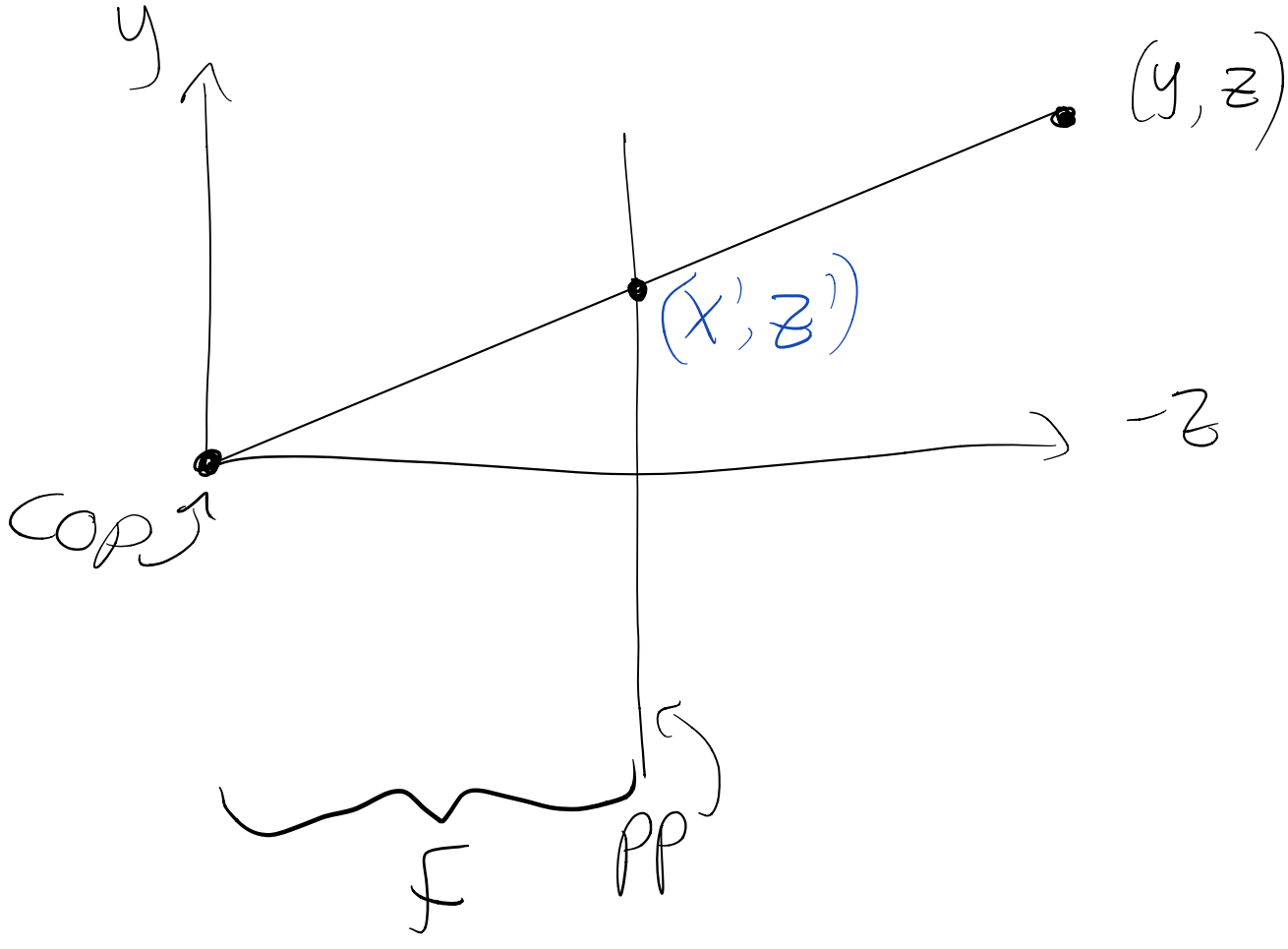

CoolOpticalIllusions.com

The Pinhole Camera Model



Projection in a Pinhole Camera




y
(y, z)
(y', z')
-z
COP
f
PP