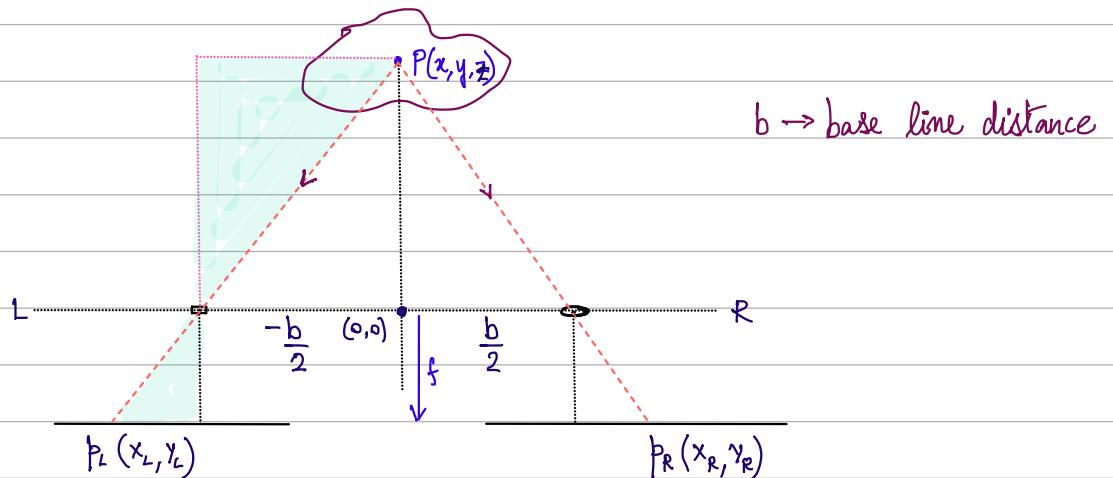


EE702: Lec-8 (5 Feb)

Stereo Vision



Now,

the math :

$$x_L = \frac{f}{z} (x + b/2)$$

$$x_R = \frac{f}{z} (x - b/2)$$

$$y_L = \frac{f}{z} y$$

$$y_R = \frac{f}{z} \cdot y$$

$$\Rightarrow x_L - x_R = \frac{bf}{z}$$

corresponding points

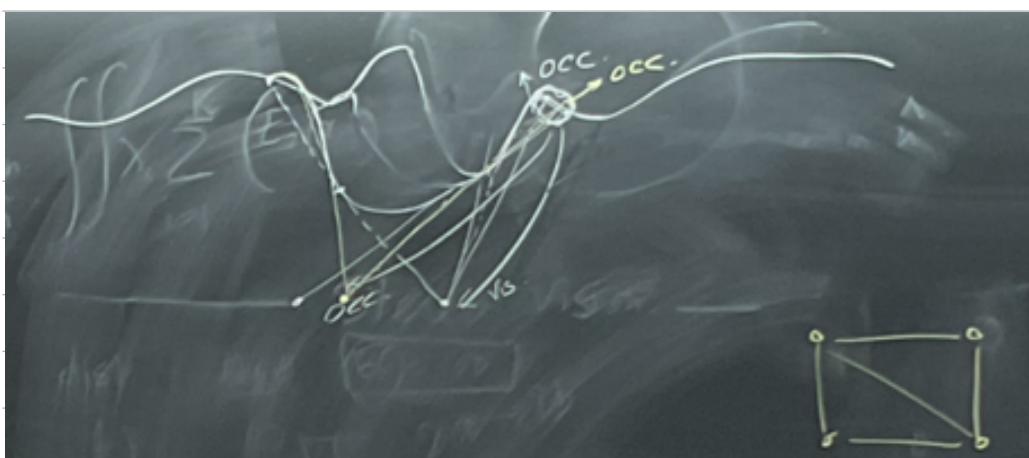
displacement

$$\Rightarrow d = \frac{bf}{z(x, y)}$$

depth

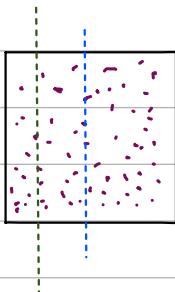
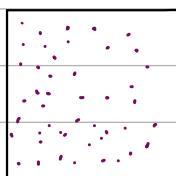
\Rightarrow

$$z(x, y) = \frac{bf}{d(x, y)}$$

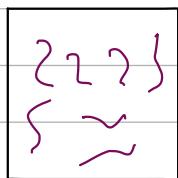


Bela Julesz Experiment

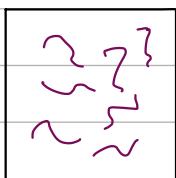
Random dot



"Staircase effect"



$N \times N$



Setting up point-correspondence ...

constraints

1] Epipolar CONSTANT

2] $\text{disp}(x, y) \geq 0$

3] $\max(d) = d_{\max}$

4] Left to right order remains unchanged,
if it is an opaque object.