Epipolar line

- $C_1$, $C_2$, $P_1$ define a plane
- $P_2$ will be on that plane
- $P_2$ is also on the image plane of $C_2$
- So $P_2$ will be on the line defined by the two planes’ intersection
Search for correspondences on epipolar line

- Reduces the dimensionality of the search space
- Walk on epipolar segment rather than search in entire image
Parallel views

- Preferred stereo configuration
  - epipolar lines are horizontal, easy to search
Parallel views

- Limit search to epipolar segment
  - from $u_2 = u_1$ (P is infinitely far away) to 0 (P is close)
Depth precision analysis

• $1/z$ linear with disparity ($u_1 - u_2$)

• better depth resolution for nearby objects

• important to determine correspondences with subpixel accuracy