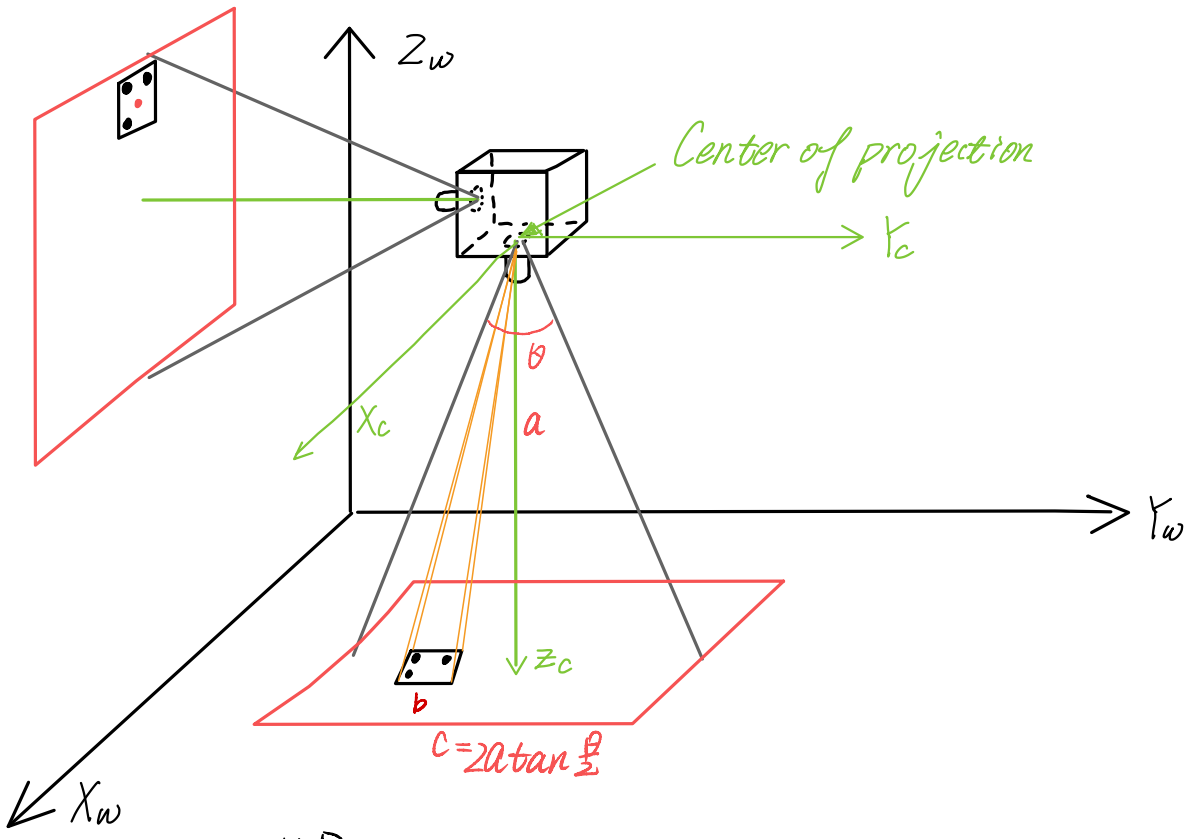
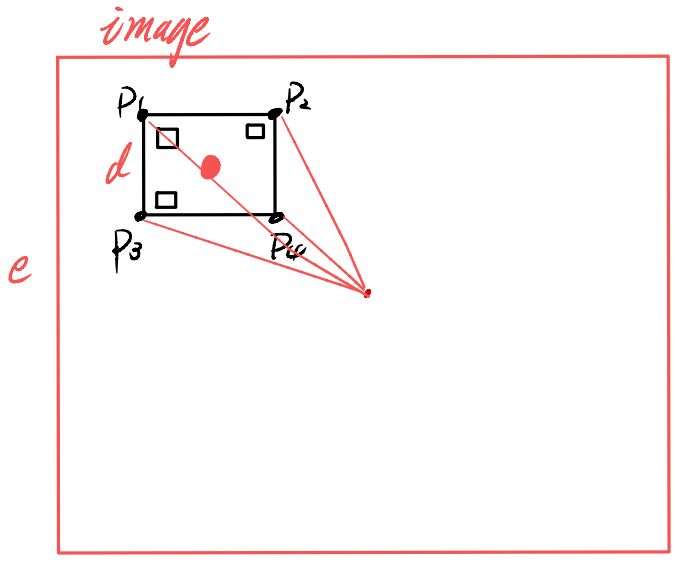
Localization Using QR Code

Assumption (1) QR code on the wall and the ground

(2) Camera's line of sight is perpendicular to the ground and the wall





(1) Distance from the center of projection is a, known by distance sensor

(2) Size of QR code is $b \times b$

(3) Size of QR code in image is known $d \times d$

(4) Size of image is known $e \times e$

$\frac{d}{e} = \frac{b}{2a\tan\frac{\theta}{2}}$ ⇒ Coordinate of P_1, P_2, P_3, P_4 ⇒ Position of current camera ⇒ Position in world frame