Replcasing some of the variables in the two equation, leads to a more concrete representation...

$$(X_{o'} + \lambda r - X_{o''} - \mu s)^T r = 0, \text{ and } (X_{o'} + \lambda r - X_{o} - \mu s)^T s = 0 .$$

and further to...

$$(X_{o'} - X_{o''})^T r + \lambda r^T r - \mu s^T r = 0$$
$$(X_{o'} - X_{o''})^T s + \lambda r^T s - \mu s^T s = 0$$

with the following matrix form...

$$\overbrace{\begin{bmatrix} r^T r & -s^T r \\ r^T s & -s^T s \end{bmatrix}}^{A} \overbrace{\begin{bmatrix} \lambda \\ \mu \end{bmatrix}}^{x} = \overbrace{\begin{bmatrix} (X_{o''} - X_{o'})^T \\ (X_{o''} - X_{o'})^T \end{bmatrix} \begin{bmatrix} r \\ s \end{bmatrix}}^{b}$$

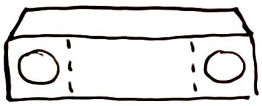
↳ unkown

which is of the form $Ax = b$.

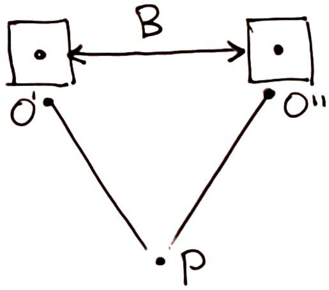
The 3D point H is then found using $H = \frac{F + G}{2}$.

- Geometric solution is not statistically optimal, does not take uncertainties into the account.
- There is a special case, using a stereo normal set up. Thats when camera 1 and 2 only have translation difference, and orientation is the same.

Example,



Stereo Camera.



* I wont be going into this. Please watch the lecture, see other notes.

My current set up uses a single moving camera.

- After obtaining our 3D points, we can use bundle adjustment to optimize our 3D point data, for an optimal solution.