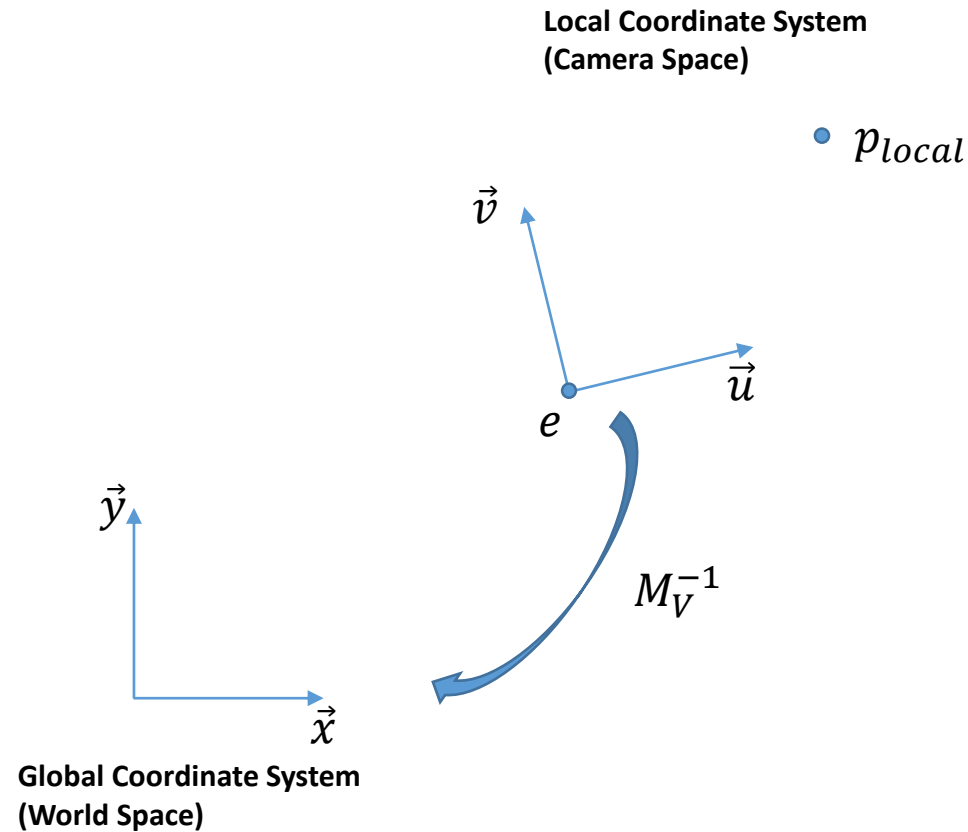


Viewing Matrix in 2D



Note: the camera points in the direction of \vec{v}

Construction of the Viewing Matrix M_V :

$$M_V^{-1} = \begin{pmatrix} \vec{u} & \vec{v} & e \end{pmatrix} = \begin{pmatrix} \vec{u}_x & \vec{v}_x & e_x \\ \vec{u}_y & \vec{v}_y & e_y \\ 0 & 0 & 1 \end{pmatrix}$$

Rotation Matrix R

$$= \begin{pmatrix} R & e \\ 0 & 1 \end{pmatrix}$$

$$M_V = (M_V^{-1})^{-1} = \begin{pmatrix} R^T & -R^T \cdot e \\ 0 & 1 \end{pmatrix}$$

Transforming a Point from Camera Space Coordinates to World Space Coordinates:

$$p_{global} = M_V^{-1} \cdot p_{local}$$

Transforming a Point from World Space Coordinates to Camera Space Coordinates:

$$p_{local} = M_V \cdot p_{global}$$