$$suv1 = f_x 0 c_x 0 f_y c_y 001 r_{11} r_{12} r_{13} t_1 r_{21} r_{22} r_{23} t_2 r_{31} r_{32} r_{33} t_3 XYZ1$$

$$\begin{matrix} x \\ y \\ z \end{matrix} = RXYZ + tx' = x/zy' = y/z$$

$$x'' = x'1 + k_1 r^2 + k_2 r^4 + k_3 r^6 1 + k_4 r^2 + k_5 r^4 + k_6 r^6 + 2p_1 x' y' + p_2(r^2 + 2x'^2)$$

$$y'' = y'1 + k_1 r^2 + k_2 r^4 + k_3 r^6 1 + k_4 r^2 + k_5 r^4 + k_6 r^6 + p_1(r^2 + 2y'^2) + 2p_2 x' y'$$

$where \quad r^2 = x'^2 + y'^2$
$u = f_x * x'' + c_x$
$v = f_y * y'' + c_y$