Adam Krebs
Computer Vision HW #2
2/29/12
Professor Fergus

Part 1.

1. $$\begin{bmatrix} 0 & -Z & 0 \\ Z & 0 & -X \\ 0 & X & 0 \end{bmatrix} \begin{bmatrix} cos\Theta & 0 & sin\Theta \\ 0 & 1 & 0 \\ -sin\Theta & 0 & cos\Theta \end{bmatrix} = \begin{bmatrix} 0 & -Z & 0 \\ Z\cos\Theta + X\sin\Theta & 0 & Z\sin\Theta - X\cos\Theta \\ 0 & X & 0 \end{bmatrix}$$

2. $$1 = \begin{bmatrix} & F & \end{bmatrix} \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} = \begin{pmatrix} -Z \\ Z\cos\Theta + X\cos\Theta + Z\sin\Theta - \cos\Theta \\ X \end{pmatrix}$$

3. $$\begin{pmatrix} X'_x \\ X'_y \\ X'_z \end{pmatrix} \begin{pmatrix} -Z \\ Z\cos\Theta + X\cos\Theta + Z\sin\Theta - \cos\Theta \\ X \end{pmatrix} = 0$$

4. $$R = \begin{bmatrix} \cos\Theta & 0 & \sin\Theta \\ 0 & 1 & 0 \\ -\sin\Theta & 0 & \cos\Theta \end{bmatrix} \quad T_v = \begin{bmatrix} 1 & 0 & 0 & V_x \\ 0 & 1 & 0 & V_y \\ 0 & 0 & 1 & V_z \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} P_x \\ P_y \\ P_z \\ 1 \end{bmatrix}$$

Part 2.

$$P = \begin{bmatrix} .0858 & .0132 & .0290 & -.8788 \\ .0594 & .0095 & .0098 & .4418 \\ .0123 & .0042 & .0049 & .1426 \end{bmatrix} \quad C = \begin{pmatrix} -.2824 \\ .5266 \\ .8018 \\ .0067 \end{pmatrix}$$

Part 3.

Part 3 missing.

Part 4.

$$A = \begin{bmatrix} 417.6496 & 7 & 967.5 \\ 0 & 417.6496 & 643.500 \\ 0 & 0 & 1 \end{bmatrix}$$