

1.Prerequisites:

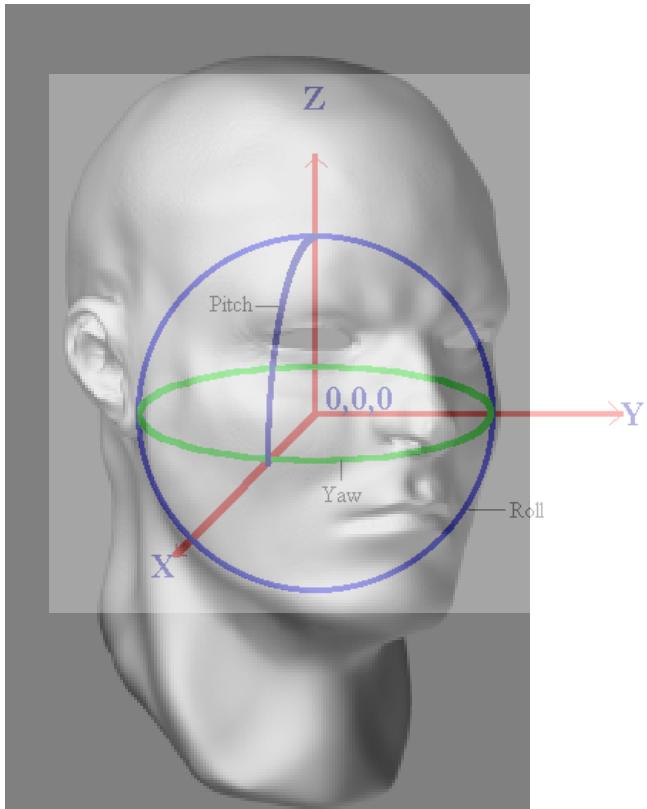
- opencv 4.5.5
- ITK (4.13.2-dfsg1-8): sudo apt-get install libinsighttoolkit4-dev

2.Run

- modify cmakelist.txt (find package: opencv & ITK; target_link_libraries)
- check main.cpp

Coordinate system

degree: -180 ~ 180



$$R_z(z) = \begin{pmatrix} \cos(z) & -\sin(z) & 0 & 0 \\ \sin(z) & \cos(z) & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix},$$

$$R_x(x) = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & \cos(x) & -\sin(x) & 0 \\ 0 & \sin(x) & \cos(x) & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix},$$

$$R_y(y) = \begin{pmatrix} \cos(y) & 0 & \sin(y) & 0 \\ 0 & 1 & 0 & 0 \\ -\sin(y) & 0 & \cos(y) & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix},$$

$$\boxed{R = R_z(\phi) R_y(\theta) R_x(\psi)}$$

$$\mathbf{R} = \mathbf{R}_z \cdot \mathbf{R}_y \cdot \mathbf{R}_x$$