
Algorithm: Pose Estimation

Input: List of Images, List of Depths, Camera Intrinsics**Output:** List of Poses

```
1 Function POSESTIMATION(Im, Dep, K) is
2   poseset  $\leftarrow \{\}$  ;
3   curr  $\leftarrow I_4$  ;
4   for i = 1 to |Im| - 2 do
5     essentialMat  $\leftarrow$  findEssentialMat(Im[i - 1], Im[i]) ;
6     distance  $\leftarrow$  calculateDistanceBetween(Dep[i - 1], Dep[i], K) ;
7     R, t  $\leftarrow$  recoverPose(essentialMat) ;
8     scaledT  $\leftarrow$  t · distance · 0.001 ;
9     pitch, yaw, roll  $\leftarrow$  getEulerAngles(R) ;
10     $\Delta D \leftarrow Dep[i] - Dep[i - 1]$ ;
11    if  $\left(\frac{\sum(\Delta D > 0)}{size(\Delta D)} > 0.50\right) \wedge (pitch > 0.10) \wedge (t[2] < 0)$  then
12       $t \leftarrow t \odot [1, 1, -1]^T$  ;
13    else if  $\left(\frac{\sum(\Delta D < 0)}{size(\Delta D)} > 0.50\right) \wedge (t[2] < 0)$  then
14       $t \leftarrow t \odot [1, 1, -1]^T$  ;
15    curr  $\leftarrow curr \cdot \begin{pmatrix} R & t \\ 0 & 1 \end{pmatrix}$  // Converting to Open3D format
16    poseset  $\leftarrow poseset || curr$ 
17  return poseset
```
