5.3 3D - Temporal Tracker

Registration - What is it?

- the process of mapping sets of data into 1 coordinate system. Here we have depth camera data and a 3D object model. and we are trying to best fit them togeth (what? what is the reference coordinate system we are trying to map to?)

- needs an error function.

$$\epsilon_j^v(T, D) = N_v \cdot (T^{-1} D(x_j) - \chi_j)$$

χ_j : a point on the object in object coordinate system.

N_v : a unit vector that defines the direction of displacement.

T : the object transformation from the camera. (sec 5.2) (how do you get that?)

x_j : the projection of $T\chi_j$.

D : the depth image / frame

$D(x)$: the back projection of the pixel x

$$\epsilon(X_m, n_m, X_s, T) = n_m^T (X_m - T X_s)$$

X_m : a point on the model

X_s : a point on the scene (what is the scene?)

n_s : the surface normal of X_m, (normal to camera? to the object surface?)

T : the transformation that establishes the relation between the model and the scene. (from an initial starting state? what is the reference coordinate system)