**Introduction**

**ICP**

1. **[talk about energy here]**
2. To derive equation 20 from the paper we must perform the following steps:

From the paper we are given that:

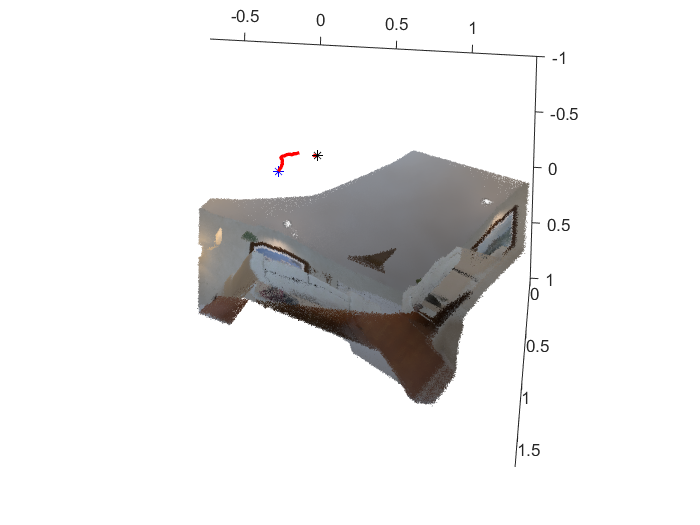
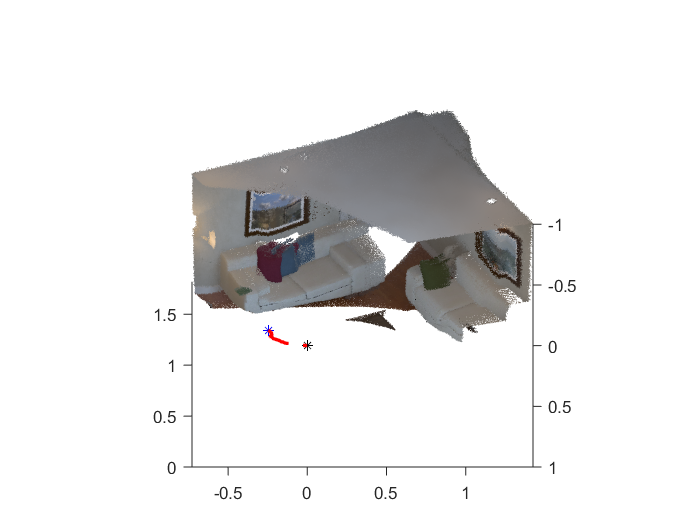
And we know that is a vector of points which we can represent as such:

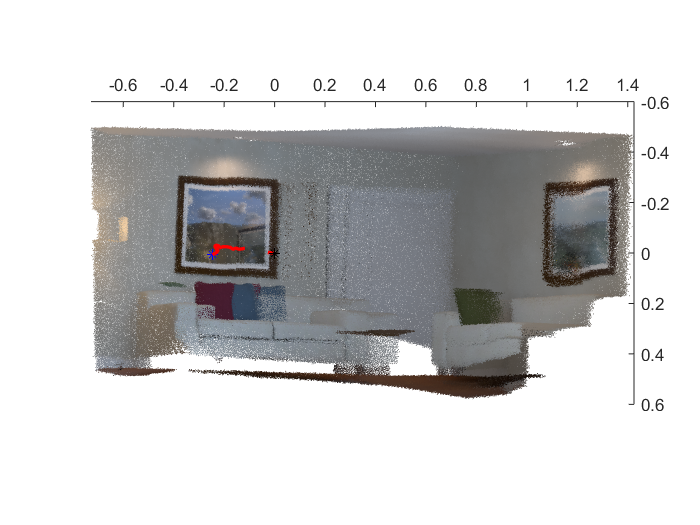
Multiplying through we get:

Again, from the paper we are given that:

And multiplying these through and adding the points we get:

Which is of the same form as the equation above.

1. 
2. **B.**



**C.**

**Figure 1 A-C: Results of the ICP algorithm without fusion**

In Figure 1 above we can see the reconstruction of a small room using the Iterative Closest Point algorithm. The red line represents the estimated camera trajectory, with the black asterisk representing the starting position and the blue the final position. A discontinuity in the camera trajectory can be noticed. Within the reconstruction there are some inaccuracies present, the blue pillow on the couch was not fully reconstructed and looks like a second version of it was partially built. The paintings on the wall are also wavy instead of straight. The reconstruction is also grainy in some areas.

**Point-based Fusion**

1. [**Talk about benefits here]**