Bonus material

Taking out the trash

Three undesirables:

1. Performing redundant registrations
2. Using bad registrations
3. Keeping bad scans

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Lu and Milios show that

$$\mathbf{C}_{\mathbf{X}} = \begin{pmatrix} \sum_{j=1}^{n} C_{1j}^{-1} & C_{12}^{-1} & \dots & C_{1n}^{-1} \\ C_{21}^{-1} & \sum_{j=1}^{n} C_{2j}^{-1} & \dots & C_{2n}^{-1} \\ \vdots & \vdots & \ddots & \vdots \\ C_{n1}^{-1} & C_{n2}^{-1} & \dots & \sum_{j=1}^{n} C_{nj}^{-1} \end{pmatrix}^{-1}$$

which only depends on the pairwise registrations' covariances, *not the transforms!*

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Select the pairs that best keep $\mathbf{C}_\mathbf{X}$ low.

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Graph edges that are too "stretched" after optimization are probably bad.

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How do we root out undesirable scans?

Don't keep scans whose final expected error is more than we are willing to accept (say, 10 cm).