

The Analytic 3-D Transform for the Least-Squared Fit of Three Pairs of Corresponding Points

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Abstract

We derive the analytic transformation for minimizing the summed-squared-distance between three movable points in one three-space pose to three corresponding fixed points in another three-space pose. This change of basis is a general rigid-body transformation (translation and rotation), with the addition of a uniform scale. We also derive and present the root-mean-squared distance between the final transformed points and the fixed points.