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Self-Calibration of Robot-Sensor System

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The process of finding the coordinate transformation between a robot and an external sensor system has been addressed. This calibration is equivalent to solving a nonlinear optimization problem for the parameters that characterize the transformation. A two-step procedure is herein proposed for solving the problem. The first step involves finding a nominal solution that is a good approximation of the final solution. A variational problem is then generated to replace the original problem in the next step. With the assumption that the variational parameters are small compared to unity, the problem that can be more readily solved with relatively small computation effort.