

A Hypothesis of State Covariance Decorrelation Effects to Partial Observability SLAM

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Abstract :

This paper analyze the performance of partial observability in simultaneous localization and mapping(SLAM) problem. The study focuses mainly on the effect of having a decorrelation technique known as Covariance Inflation to the estimation. The matrix inversion will be the main element to be investigated through two conditions with respect to some defined environment namely as unstable partially observable SLAM and partially observable SLAM via matrix norm analysis. For assessment purposes, the Extended Kalman Filter estimation is referred as the estimator to understand how the conditions can influence the results. The simulation results depicted that, the matrix norm is able to determine the efficiency of estimation and is proportional to the uncertainties of the system.

Keyword - *Partial Observability, SLAM, EKF, Matrix Norm.*