Using the Extended Information Filter for Localization of Humanoid Robots on a Soccer Field
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Abstract

One of the contests of the RoboCup is Nao robot soccer. For Nao robots to play soccer, they need to be able to localize themselves on the field. The extended information filter (EIF) is an algorithm that is not yet researched on this problem, as opposed its dual, the extended Kalman filter (EKF). The EIF is computational less complex than the EKF in the second part, but vice versa in first part of the algorithm. Both filters require a robust landmark detector to work efficiently. There have been many studies regarding robot localization and the use of variations of the EKF in Nao robot soccer, but not yet of the EIF. In this thesis it is found that the EKF requires less computation time that the EIF, but the EIF has a better accuracy. The EKF and the EIF used the same data, were tested on the same computer, and have a similar form of implementation, thus the only factors that played a role in their comparison, where the filters themselves.