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Real-time Localization of a Moving Target Using Hybrid RSS and AoA Measurements

This paper addresses the target tracking problem, by extracting received signal strength (RSS) and angle of arrival (AoA) information from the received radio signal, in the case where the target transmit power is considered unknown. By combining the radio observations with prior knowledge given by the target transition state model, we apply the maximum a posteriori (MAP) criterion to the marginal posterior distribution function (PDF). However, the derived MAP estimator cannot be solved directly, so we tightly approximate it for small noise power. The target state estimate is then easily obtained at any time step by employing a recursive approach, typical for Bayesian methods. Our simulations confirm the effectiveness of the proposed algorithm, offering excellent estimation accuracy in all considered scenarios.

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