

A novel type of iterative partition-based moving horizon estimators (PMHE) is proposed, the estimates of which approach those of a centralized moving horizon estimator as the number of iterations increases. It uses a deterministic setting and can handle known inputs as well as bounds on the estimated state. We derive conditions on the system, its partitions, and the scalar regularization parameter, which guarantee convergence towards the optimal centralized state estimate as well as stability of the estimation error dynamics, even with a finite number of iterations at each time step. Finally, numerical simulations demonstrate both the features and competitive estimation quality of the proposed method.