Asynchronous Simulated Kalman Filter Optimization Algorithm

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Abstract.
Simulated Kalman filter (SKF) is an optimization algorithm which is inspired by Kalman filtering method. SKF was introduced as synchronous population-based algorithm. This work introduced a new variation of SKF which is SKF with asynchronous update mechanism, asynchronous-SKF (ASKF). In contrast to the synchronous implementation where the whole population go through each optimization step as a group, in ASKF an agent starts its optimization steps only after its preceding agent has complete all of its optimization steps. The performance of ASKF is compared against SKF using CEC2014 benchmark functions, where the ASKF is found to perform significantly better than the original SKF.

Keywords: Asynchronous; Simulated Kalman Filter; Optimization.