An Oppositional Learning Prediction Operator for Simulated Kalman Filter

Zuwairie Ibrahim, Kamil Zakwan Mohd Azmi Faculty of Manufacturing Engineering Universiti Malaysia Pahang Pekan, Malaysia

Badaruddin Muhammad, Mohd Falfazli Mat Jusof
Faculty of Electrical and Electronics Engineering
Universiti Malaysia Pahang
Pekan, Malaysia

Nor Azlina Ab. Aziz, Nor Hidayati Abdul Aziz
Faculty of Engineering and Technology
Multimedia University
Melaka, Malaysia

Mohd Ibrahim Shapiai

Malaysia-Japan International Institute of Technology
Universiti Teknologi Malaysia

Kuala Lumpur, Malaysia

Abstract:

Simulated Kalman filter (SKF) is a recent metaheuristic optimization algorithm established in 2015. In the present study, we introduce a prediction operator in SKF to prolong its exploration and to avoid premature convergence. The proposed prediction operator is based on oppositional learning. The results show that using CEC2014 as benchmark problems, the SKF algorithm with oppositional learning prediction operator outperforms the original SKF algorithm in most cases.

Keywords- SKF; prediction; oppositional learning