عنوان مقاله:

Non-dominated Sorting Genetic Filter A Multi-objective Evolutionary Particle Filter

نویسندگان:

S. Mostapha Kalami Heris - *Control Engineering Department, Faculty of Electrical and Computer Engineering, K. N. Toosi University of Technology, Tehran, Iran*

Hamid Khaloozadeh - *Control Engineering Department, Faculty of Electrical and Computer Engineering, K. N. Toosi University of Technology, Tehran, Iran*

خلاصه مقاله:

In this paper, the problem of nonlinear state estimation converted to a multi-objective optimization problem, and based on Non-dominated Genetic Algorithm II (NSGA-II)and Particle Filter (PF), a multi-objective evolutionary particle filter, namely Non-dominated Genetic Filter (NSGF) is proposed. Search and optimization abilities of NSGA-II are incorporated into standard particle filtering framework to improve the estimation performance. Classic filtering approaches define asingle criterion to evaluate an estimated state vector, however in this paper, two criteria are defined to evaluate and rate estimatedstate vectors. Conversion of the state estimation problem into a multi-objective optimization problem, improves diversity ofpromising solutions, and finally improves the estimation performance. Simulation results are given for an example and NSGF is compared to other types of particle filters. Efficiency and applicability of NSGF is confirmed according to the obtained results.

کلمات کلیدی:

Particle Filter; Multiobjective Optimization; Nondominated Sorting Genetic Algorithm II; Evolutionary Filtering; Nonlinear Filtering; State Estimation

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/276324