



Adaptation by Evolutionary Algorithms in Unfalsified Control

By Tanet Wonghong

Shaker Verlag Aug 2010, 2010. Buch. Condition: Neu. Neuware - Unfalsified control theory is a variant of adaptive control techniques. The main attractive point of this approach is that no plant model is required to design an adaptive controller. Following this concept, an adaptive controller is implemented by means of switchings among many candidate controllers in a predefined set. The plant input signal and the plant output signal are observed while one candidate controller is active in the feedback loop, and they are used for the unfalsification procedure to decide on which candidate controller in the set should be switched on as the next active controller. In the original work of Safonov et al., the adaptation of controllers can only be performed using the switching of an active controller in a predefined set of controllers. This is a major limitation to apply this approach to a nonlinear system. Usually, a fixed set of controllers that performs well for one operating point cannot guarantee to achieve a good performance under other operating conditions. To solve the above problem, when a new operating condition occurs, a new set of controllers is computed using a new cost function developed in this thesis and...



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