Optimal control of 3-phase active Fyltrtvan using backstepping algorithm and extended bees algorithm

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Abstract In this thesis, the stabilization of different modes of three-phase active power filter system is discussed. Thus, first this system is analyzed. Then using extended back-stepping method its control is dealt with. Since confusion enters in the system, a synthesis of extended back-stepping method and adaptive control method is used to stabilize it. The designed controller has certain advantages which inappropriate choices of their amounts cause instability in the system. In order to achieve an optimized answer for stabilization, the stabilization of the controller is discussed by bee algorithm. Bee algorithm minimizes suitability function to find the appropriate amounts for the interest rates of controller. The chosen suitability function is the sum of error squares of system which make controller stabilize the system with less error, more speed and a limited control input. To demonstrate the efficiency of the proposed controller, we simulate it and show its effectiveness for stabilization of three-phase active power filter system. Key words: Three-phase Active Power Filter, Confusion, Extended Back-stepping Control, Adaptive Control, Bee Algorithm.

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