ANALYSIS OF METAHEURISTIC ALGORITHMS ON NONLINEAR SYSTEMS

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CERTIFIACTE

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ABSTRACT

The **process of optimization is one of the most challenging problems of engineering. Engineering problems can be defined as search for one near optimal description among many possibilities, under real time constraints. This requires several strategies and methodologies therefore lot of research has been done and is still going on to have desired outcomes. Search techniques such as Bacterial foraging, Particle swarm and Firefly based optimization algorithms are now among the latest research topics. Here this work throws light on these bio-inspired evolutionary algorithms that are used to optimize the objective function, under given constraints. Several meta-heuristic algorithms have been analysed and are later implemented on the benchmark problems. The performance of each algorithm is judged on the basis of three parameters elapsed time, mean and standard deviation. Bacterial Foraging Algorithm is further used in non-linear control applications. These Applications use the concept of indirect adaptive control.**

Nonlinear systems analysed are Liquid level system and DC servomotor. Both the nonlinear systems track the reference trajectory and the error is found to be zero at steady state. The simulation results have been obtained using MATLAB.

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