A NEW APPROACH TO GLOBAL OPTIMIZATION MOTIVATED BY PARLIAMENTARY POLITICAL COMPETITIONS

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ABSTRACT. *Several biology inspired optimization algorithms such as Genetic Algorithms, Ant Colony Optimization (ACO)and Particle Swarm Optimization (PSO) have previously been proposed by researchers. Recent approaches in numerical optimization have shifted to motivate from complex human social behaviors. In this paper, a new optimization algorithm, namely parliamentary optimization algorithm (POA) is proposed by studying the competitive and collaborative behaviors of political parties in a parliament. Experimental results reveal that our proposed approach is superior to PSO approach over some benchmark multidimensional functions.*
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1. **Introduction.** Human beings have always been inspired by natural and biological processes for purposes like making tools, seeking foods, protection and transportation. Recently, engineers and specially computer scientists have proposed various nature inspired techniques and computational approaches for solving ever increasingly complex problems in engineering and society. Some of the successful applications of such methods to real-world applications and optimization problems include manufacturing, scheduling, anomaly detection, data mining, engineering design, software testing and bioinformatics.

Scale and complexity of the optimization problems in today's industry demand efficient solutions in terms of generating high quality solutions within a reasonable amount of time. Evolutionary algorithms, ant systems, artificial immune systems, artificial neural networks and swarm intelligence systems are examples of optimization approaches that are motivated by biology and life sciences. They satisfy the above mentioned conditions and have proved to be highly practical in several real world applications.

During the evolution, natural systems have progressively evolved from biological to social systems. They range from simple biological entities like single cell organisms, e.g. bacteria, to highly complex social systems like primate and human societies. Correspondingly there is a spectrum of biology inspired approaches. In what follows we point briefly to some important instances. Genetic algorithms based on the Darwin theory of evolution are now typical examples of biology inspired optimization methods [1-4]. Biology of the immune system has led to artificial immune inspired mechanisms with successful