

A NEW ARTIFICIAL IMMUNE ALGORITHM FOR SOLVING GEAR DESIGN PROBLEM

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ABSTRACT

The design of gears is critical for smooth running of any mechanism, automobile and machinery. Gear drive design starts with the need of optimizing the gear thickness, module, number of teeth etc., this creates huge challenges to a designer. Optimization algorithms are more flexible and gaining importance in engineering design problems, because of the accessibility and affordability of today's mechanical field. A population based heuristic algorithm offers well-organized ways of creating and comparing a novel design solution in order to complete an optimal design. In this paper, a new artificial immune system-based algorithm proposed as Modified Artificial Immune System (MAIS) algorithm is used to optimize a gear design problem. The results are compared with an existing design.

Key words – Artificial Immune System, Gear Materials, Gear design, Spur Gear drive and Multi-objective Optimization.