

Pavement Maintenance and Rehabilitation Scheduling Using Genetic Algorithm Based Multi Objective Optimization Technique

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Abstract : This paper presents pavement maintenance and management system (PMMS) to obtain optimum pavement maintenance and rehabilitation strategies and maintenance scheduling for a network using a multi-objective genetic algorithm (MOGA). Optimal pavement maintenance & rehabilitation strategy is to maximize the pavement condition index of the road section in a network with minimum maintenance and rehabilitation cost during the planning period. In this paper, NSGA-II is applied to perform maintenance optimization; this maintenance approach was expected to preserve and improve the existing condition of the highway network in a cost-effective way. The proposed PMMS is applied to a network that assessed pavement based on the pavement condition index (PCI). The minimum and maximum maintenance cost for a planning period of 20 years obtained from the non-dominated solution was found to be 5.190×10^{10} ₹ and 4.81×10^{10} ₹, respectively.

Keywords : genetic algorithm, maintenance and rehabilitation, optimization technique, pavement condition index

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