

عنوان مقاله:

FORCED WATER MAIN DESIGN MIXED ANT COLONY OPTIMIZATION

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خلاصه مقاله:

Most real world engineering design problems, such as cross-country water mains, include combinations of continuous, discrete, and binary value decision variables. Very often, the binary decision variables associate with the presence and/or absence of some nominated alternatives or project's components. This study extends an existing continuous Ant Colony Optimization (ACO) algorithm to simultaneously handle mixed-variable problems. The approach provides simultaneous solution to a binary value problem with both discrete and continuous variables to locate and size design components of the proposed system. This paper shows how the existing continuous ACO algorithm may be revised to cope with mixed-variable search spaces with binary variables. Performance of the proposed version of the ACO is tested on a set of mathematical benchmark problems followed by a highly nonlinear forced water main optimization problem. Comparing with few other optimization algorithms, the proposed optimization method demonstrates satisfactory performance in locating good near optimal solutions.

کلمات کلیدی:

ant colony optimization, mixed continuous-discrete problems, forced water main

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