

Senegaulois Algorithm for Transportation Network and Land Use Problem

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Abstract: The *Transportation Network and Land Use Problem* (TNLUP) is a challenging combinatorial optimization problem. The redevelopment of abandoned sites to accommodate housing or new economic activities is a major issue of urban policy. This problem belongs to the class of NP-hard problems. In this paper, we present an attractive *Mixed Integer Nonlinear Programming* (MINLP) formulation of the (TNLUP) and its resolving by *Senegaulois Algorithm*. We first introduce a useful Nonlinear formulation of the problem and then a method of how to reformulate it to a new linear model. Finally, we present optimal results, obtained with the discrete linear reformulation, for some instances. Then, some instances of realistic problems of transportation network and land use in the city of Dakar are presented.

Keyword: Transportation Network, Land Use Planning, Quadratic Assignment Problem (QAP), Mixed Integer Nonlinear Programming (MINLP), Senegaulois Algorithm.