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An Iterative Solution Approach to a Multi-Objective Facility Location Problem

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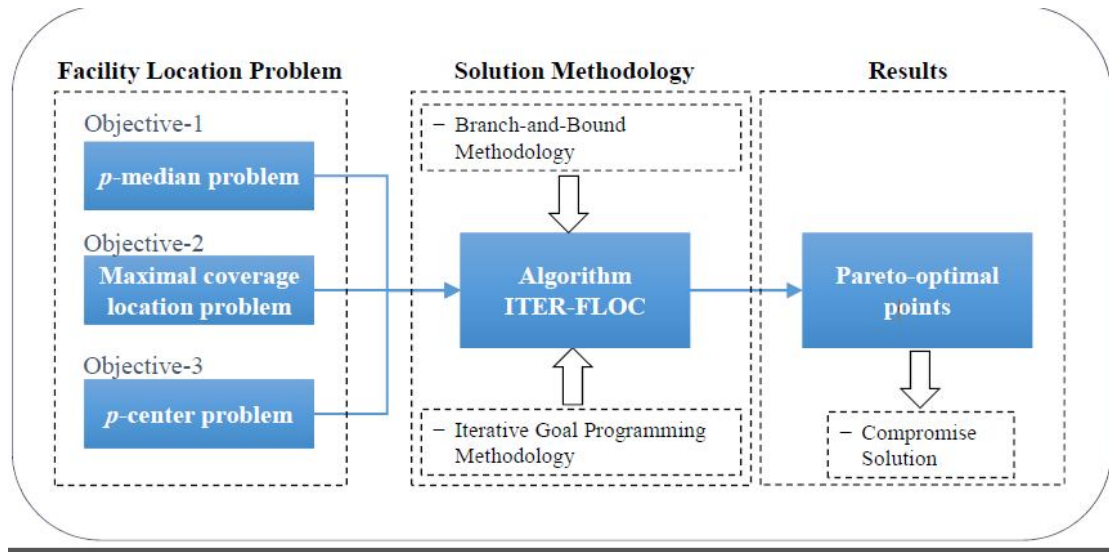
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ABSTRACT

This work presents a novel methodology for solving multi-objective facility location problems (*mo*-FLPs) with the focus on public emergency service stations. Our study is one of a few studies incorporating the objectives of three well-known problems, viz. the p -median problem (p MP), the maximal coverage location problem (MCLP) and the p -center problem (p CP). Aiming to find a set of Pareto optimal solutions and a compromise solution for all three objectives, we have developed an algorithm which solves each individual location problem sequentially. The proposed approach is mainly based on a combination of the branch & bound and iterative goal programming techniques. The performance of the algorithm is demonstrated with numerical examples.

Keywords: Multi-objective optimization; p -median problem; Maximal coverage location problem; p -center problem; Facility location.

1. INTRODUCTION

Location problems aim to determine the best locations for facilities such as hospitals, emergency stations, banks, ports, warehouses, fire stations, military installations, etc.

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