

A METHOD FOR SOLVING INTUITIONISTIC FUZZY LINEAR FRACTIONAL PROGRAMMING PROBLEM

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Abstract. This study introduces an approach for determining the fuzzy optimal solution of the intuitionistic fuzzy linear fractional programming problem (IFLFPP). Notably, the problem involves triangular intuitionistic fuzzy numbers for all parameters, decision variables, and constraints' right-side resources. Unlike conventional methods that often necessitate converting the problem into a crisp model, our proposed technique directly tackles the problem in its fuzzy domain. Through this method, we successfully derive the optimal solution without resorting to crisp conversions. The efficacy of the proposed approach is demonstrated through a detailed numerical example. This research contributes to the advancement of techniques for handling fuzzy optimization problems, particularly in scenarios where precise crisp conversions may be impractical or unwarranted.

Keywords. Fuzzy Linear fractional programming problem, Intuitionistic Fuzzy Set, Triangular Intuitionistic Fuzzy number.

1 Introduction

In the realm of real-world data, precision often gives way to imprecision and uncertainty, necessitating a shift in how we approach problem parameters. Consequently, these parameters are frequently conceptualized as fuzzy numbers, acknowledging the inherent ambiguity in decision-making scenarios. While fuzziness in decision-making has historically seen limited application, the Intuitionistic Fuzzy Set (IFS) theory offers a promising avenue for addressing such uncertainties. Intuitionistic fuzzy sets have demonstrated significant utility in navigating vagueness and find application across various domains, including decision-making processes and medical diagnosis. Linear programming stands out as a prevalent optimization technique in addressing real-world challenges. Within this framework, Linear Fractional Programming emerges as a method tailored to maximizing the ratio of two linear