A Taylor Series based Fuzzy Mathematical Approach for Multi Objective Linear Fractional Programming Problem with Fuzzy Parameters

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Abstract

This article presents an approach to acquire the solution of multi-objective linear fractional programming problems where the parameters are assumed to be triangular fuzzy numbers. This is done through a fuzzy mathematical programming perspective based on an approximation method using Taylor series. The problem is first formulated into an equivalent deterministic form using the concept of α-cuts. The associated membership function of each objective function is formulated using the individual optimal solution and is then converted into a linear function by applying the first order Taylor series. The multi-objective linear fractional programming problem then gets reduced to a linear programming problem by applying fuzzy mathematical programming. To illustrate the computational simplicity and applicability of the proposed approach, a numerical example is solved and the results are compared with existing methods.

References


Innovative Science Engineering and Technology 2 (6), 153-160.


Index Terms

Computer Science  Fuzzy Systems

Keywords

Multi-objective linear fractional programming problem, fuzzy mathematical programming, Taylor series, triangular fuzzy number, $\alpha$-cut