Linear programming problem in an environment that includes different types of uncertainties represents real-world situations. In such situations, different forms of uncertain data parameters are commonly found in that problem. Fuzzy sets and their extensions are important tools of representing vague information. For decades, a lot of approaches are developed to solve fuzzy-linear programming problems. The existence of hybrid types of uncertainties in the fuzzy-linear programming problem imposes a real challenge to solve it. There is a need for introducing an efficient methodology to transform different types of uncertainties into a unified form. This paper introduces a new approach to solve hybrid fuzzy-linear programming using an improved version of shadowed fuzzy numbers (SFNs). SFNs are useful transformation tool for different types of uncertainties. They have the advantage of preserving the characteristics of uncertainty for different types of fuzzy sets used in the problem.

**Index Terms**

Computer Science  
Fuzzy Systems

**Keywords**

Shadowed sets, Fuzzy numbers, Intuitionistic fuzzy numbers, Non-specificity measure, Entropy measure, Fuzzy linear programming