

Special Issue on **Bi-Fuzzy, Random-Fuzzy, Fuzzy-Rough, and Type 2 Fuzzy Optimization Systems: Theory and Applications**

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In the rising trends of information technology, the concepts of cost, time, delivery, space, quality, durability, and price have started gaining greater importance with time in solving managerial decision-making problems in supply chain model, transportation problem, or inventory control problems. Moreover, day by day competition is becoming tougher in imprecise environments. For instance, customer demand is often being affected by several varying factors like production price, income level, and the like. In these cases, the demand either remains unfulfilled or is difficult to obtain with certainty in the real-world market. Fuzzy sets are not always able to directly depict such uncertainties because they exhibit numeric membership functions, whereas random fuzzy, bi-fuzzy, fuzzy random, and type 2 fuzzy sets are found to be more suitable to accommodate inherent uncertainties. These different uncertain systems can handle higher levels of uncertainty in more complex real world problems. However as higher complexities are involved in designing different fuzzy systems, it becomes critical to use the optimization techniques for achieving the optimal design.

We therefore encourage researchers as well as practitioners of industrial engineering and management to contribute to this special issue with original and high quality articles addressing new concepts, methods, algorithms, modeling, and applications of green supply chain, inventory control problems, transportation problem, and new information related to optimization for the topic from the theoretical and applied viewpoints in fuzzy, random fuzzy, bi-fuzzy, type 2 fuzzy, and random environments.

Potential topics include but are not limited to the following:

- ▶ Bi-fuzzy and fuzzy random theory and applications in optimization systems
- ▶ Linear programming for type 2 fuzzy and engineering applications
- ▶ Bi-fuzzy, random-fuzzy, fuzzy-rough, and rough expectation with the use of particle swarm optimization
- ▶ PID, FLC controllers, soft computing, and fuzzy logic for optimum results
- ▶ Design of nonlinear optimal controllers
- ▶ Vectorial fuzzy and fuzzy signatures

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/afs/fbrf/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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Submission Deadline

Friday, 10 August 2018

Publication Date

December 2018