Transactions on Fuzzy Sets and Systems (TFSS)

Special Issue on

On Engineering Applications of Fuzzy Set Extensions

The two main principles have been discussed in the classical logic for long years. The Principle of excluded middle: Every proposition is true or false, and there is not another possibility and the Principle of non-contradiction: No statement is true and false simultaneously. Aristotelian logic is called 0-1 logic, which is based on the above principles: A proposition is true or false and cannot be true and false at the same time.

Ordinary fuzzy set theory (OFS) has been expanded by many researchers and widely used in various fields such as engineering sciences, decision-making, and automatic control. Figure 1 presents the extensions of (OFS). To address the imprecision of membership degrees, Zadeh presented the extension of type-2 fuzzy sets in 1975. This has led researchers to think that innovative approaches can anymore be developed in membership function definitions. Thus, intensive studies have been started to create a new fuzzy set extension in the literature: Interval valued fuzzy sets were proposed to literature (Zadeh, 1975; Sambuc, 1975; Jahn, 1975; Grattan-Guinnes, 1976). intuitionistic fuzzy sets by Atanassov (1986), fuzzy multi-sets by Yager (1986), second type intuitionistic fuzzy sets by Atanassov (1989), neutrosophic fuzzy sets by Smarandache (1998), nonstationary fuzzy sets by Garibaldi and Ozen (2007), hesitant fuzzy sets by Torra (2010), picture fuzzy sets by Cuong (2014), q-rung fuzzy sets by Yager (2017), spherical fuzzy sets by Kahraman and Kutlu Gündoğdu (2018), fermatean fuzzy sets by Senapati and Yager (2018), circular intuitionistic fuzzy sets by Atanassov (2020), decomposed fuzzy sets by Cebi et al. (2022), continuous intuitionistic fuzzy sets by Alkan and Kahraman (2023). These extensions have allowed for more flexible and nuanced representation of uncertainty in various decision-making processes.

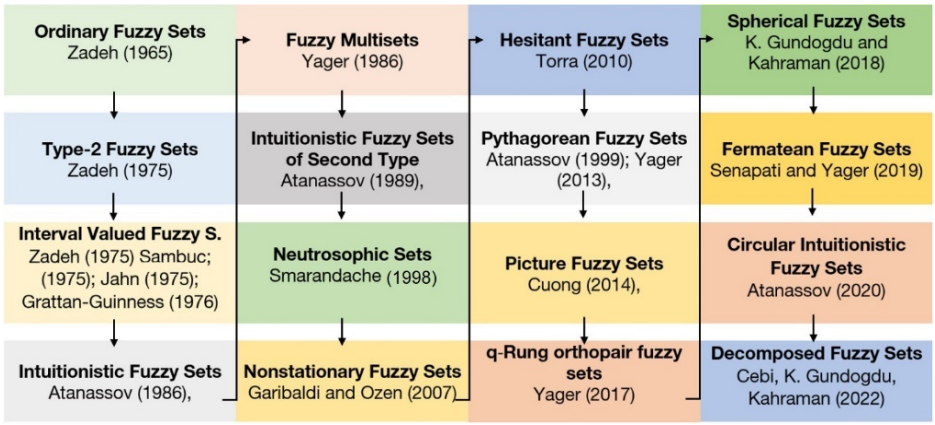

Fig 1. *Fuzzy sets and its extensions*

This special issue will cover the best papers on the theory and applications of fuzzy sets extensions in engineering. Fuzzy control theory in electronics engineering, fuzzy decision making and optimization theory in industrial engineering, and fuzzy detection of chemical agents in chemical engineering are some examples of fuzzy set theory in various engineering disciplines.

The submitted papers will be peer-reviewed by at least two reviewers who are expert in fuzzy set theory and applications. The important dates are as follows:

- ✓ Final date for a full paper submission: **Januaury 01, 2024**
- ✓ Review results of round 1: **April 25, 2024**
- ✓ Resubmission of revised papers: **June 20, 2024**
- ✓ Review results of round 2: **July 20, 2024**
- ✓ Notification of final decisions: **August 20, 2024**

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