

PREAMBLE

Preamble

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It is our pleasure to write the preamble for the special issue of *International Journal of Systems Assurance Engineering and Management* (IJSaEM) to honor Prof. Lotfi Zadeh on the 50th anniversary of fuzzy sets.

It is a deep-seated tradition in science to employ the conceptual structure of bivalent logic and probability theory as a basis for formulation of definitions of concepts. What is widely unrecognized is that, in reality, most concepts are fuzzy rather than bivalent, and that, in general, it is not possible to formulate a co-intensive definition of a fuzzy concept within the conceptual structure of bivalent logic and probability theory. Over past 50 years, fuzzy set theory provides an alternative thinking to many problems which always perceived to be in the realm of probability theory.

Fuzzy set theory has opened many new avenues and opportunities to solve complex problems in diverse basic science, engineering and social science disciplines. Fuzzy

set theory provides a natural platform that help integrating an array of soft computing methods (e.g., artificial neural network, genetic algorithms, Dempster-Shafer theory etc.) to address complex problems through hybrid approaches.

This special issue highlights the new developments in fuzzy set theory and related topics, especially on two major application areas including environment and health, and system assurance engineering and management. As the guest editors of the special issue of IJSaEM, we are delighted to present thirteen high quality publications, which will go a long way in the advancement of knowledge in the area of applications in soft computing.

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