
Review of Literature

REVIEW OF LITERATURE

Uncertain or imprecise data are inherent and pervasive in many important applications in the areas such as Economics, Engineering, Environment, Social Science, Medical Science and Business Management. There have been a great amount of research and applications in the literature concerning some special tools like probability theory, fuzzy set theory, intuitionistic fuzzy set theory, rough set theory, vague set theory and interval mathematics for modelling uncertain data.

Initially, fuzzy set theory was proposed by Zadeh (1965) as a mean of representing mathematically and imprecise or vague system of informations in the real world. In fuzzy set theory, there were no scope to think about the hesitation in the membership degrees which arise in various real life situations. This situations is overcome in 1986 by the invention of intuitionistic fuzzy sets. Here it is possible to model hesitations and uncertainty by using an additional degree.

In 1999, Russian researcher Molodtsov initiated a novel concept of soft set theory, which is completely a new approach for modelling vagueness and uncertainties. Soft set theory has a rich potential for application in solving practical problem in Economics, Social Sciences, Medical Science etc. Applications of soft set theory in real life problems are now catching momentum. Molodtsov successfully applied soft set theory into several directions, such as Smoothness of Functions, Game Theory, Operations Research, Riemann Integration, Perron Integration, Theory of Measurement and so on.

Maji et al. (2002) gave first practical application of soft sets in decision making problems. Pei and Miao (2005) investigated the relationship between soft sets and information systems. Maji-BiswasRoy (2003) presented the operations of soft sets and constructed a uni-intdecision making method by using these new operations and developed soft set theory. Then to make easy compaction with the operations of soft sets, they presented the soft matrix theory and setup the soft maximum decision making method (2010). These decision making methods can be successfully applied to many problems that contain uncertainties.

Shabir and Naz (2011) introduced the notion of soft topological spaces which are defined over an initial universe with a fixed set of parameters. They studied some basic concepts of soft topological spaces and also some related concepts such as soft interior, soft closure, soft subspace and soft separation axioms.

Topological studies of fuzzy soft sets were started by Tanay and Kandemir in (2011). They gave the notion of fuzzy soft topology for the first time by defining it as a collections of fuzzy soft subsets of an arbitrary fuzzy soft set. They also introduced some basic definitions in this new space.

Neog et al. (2012) studied some properties related to Fuzzy soft topological spaces and some theorems have been established in their work.

Separations axioms and connectedness in Fuzzy Soft Topological Spaces are introduced by Mahanta and Das (2012) and studied their basic properties.

Ismail Osmanoglu and Deniz Tokat (2013) introduced the concept of fuzzy soft compactness and studied their basic properties.

Mahanta (2014) introduced semi-open and the semi-closed Fuzzy soft sets in Fuzzy soft Topological Space and studied various properties of th sets along with some characterizations.

The following are some articles published on Soft sets, Soft Topological Spaces, Fuzzy soft sets, Fuzzy Soft Topological Spaces, Supra Topological Spaces and Subsets of Supra Soft Topological Spaces.

(1) Soft Set Theory-First Results

Molodstov,D. (1999)

The Soft Set theory offers a general mathematical tool for dealing objects. The basic notions of the theory of Soft Sets are introduced, the first results of the theory are presented and some problems of the future are discussed.

(2) An application of soft sets in a decision making problem

Maji,P.K., Biwas,R. and Roy,A.R(2002)

In this paper. the theories of soft sets are applied to solve a decision making problem.

(3) On soft topological spaces

Muhammad Shabir, Mumazza Naz(2011)

In this paper, it is shown that a soft topological space gives a parameterized family of topological spaces. Furthermore, with the help of an example it is established that the converse does not hold. The soft subspaces of a soft topological space are defined and inherent concepts as well as the characterization of soft open and soft closed sets in soft subspaces are investigated. Finally, soft T_1 -spaces and notions of soft normal and soft regular spaces are discussed. A sufficient condition for a soft topological space to be a soft T_1 -space is also presented.

(4) On some structures of soft topology

Bashir Ahmad and Sabir Hussain(2012)

In this paper, soft exterior is defined and its basic properties are studied. Several important results relating soft interior, soft exterior, soft closure and soft boundary in soft topological spaces are established.

(5) On soft generalized closed sets in soft topological spaces

Weijian Rong(2012)

In this paper, some new concepts in soft topological spaces such as soft first countable spaces, soft second-countable spaces and soft separable spaces are introduced and some basic properties of these concepts are explored.

(6) Soft Generalized Closed sets in Soft Topological spaces

Kannan(2012)

In this paper, it is shown that the soft generalized closed sets in soft topological spaces which are defined over an initial universe with a fixed set of parameter. A sufficient condition for a soft g-closed set to be soft closed set is also introduced. Moreover, the unions and intersection of two soft g-closed set are discussed. Finally, the new soft separation axiom, namely soft $T_{1/2}$ -space is introduced and basic properties are investigated.

(7) On soft topological space via semi open and semi closed soft sets

Mahanta, J. and Das, P.K. (2012)

This paper introduces semi open and semi closed soft sets in soft topological spaces. The notions of interior and closure are generalized using these sets. A detail study is carried out on properties of semi open, semi closed soft sets, semi interior and semi closure of a soft set in a soft topological space. Various forms of soft functions, like semi continuous, irresolute, semi open soft functions are introduced and characterized. Further soft semi compactness, soft semi connectedness and soft semi separation axioms are introduced and studied.

(8) Fuzzy Soft Topological Spaces

Tridiv Jyoti Neog, Dusmanta Kumar Sut, Hazararika, G.C. (2012)

In this paper, some properties related to fuzzy soft topological spaces have been established. The concepts on fuzzy soft point, fuzzy soft neighbourhood, fuzzy soft closure, fuzzy soft interior and fuzzy soft subspace topology are introduced and studied.

(9) Fuzzy Soft Topology

Banu Pazar Varol and halis Aygun (2012)

In this paper, they introduced the topological structure of fuzzy soft sets and fuzzy soft continuity of fuzzy soft mappings. Also they show that a fuzzy soft topological space gives a parameterized family of fuzzy topological spaces. Furthermore, with the help of an example it is shown that the constant mapping is not continuous in general. Then the notions of fuzzy soft closure and interior are introduced and their basic properties are investigated. Finally, the initial fuzzy topology and some properties of projection mappings are studied.

(10) Results on fuzzy soft topological spaces

Mahanta, J. and Das, P.K. (2012)

In this paper, Separation axioms and connectedness are introduced and investigated for fuzzy soft topological spaces.

(11) The countabilities of soft topological spaces

Weijian Rong (2012)

In this paper, some new concepts in soft topological spaces such as soft first-countable spaces, second-countable spaces, soft second-countable spaces and soft separable spaces are introduced and some basic properties of these concepts are explored.

(12) On Soft semi open sets and soft semi topology

Sai, B.V.S.T. and Srinivasa Kumar, V. (2013)

In this paper, some interesting properties of soft semiopen sets are studied. Soft semi topology on the collection of all soft semi open sets over a fixed universe set is introduced.

(13) Soft gsg-closed sets in soft topological spaces

Seenivasan, V. and Kalaiselvi, S. (2013)

In this paper a new class of soft set called soft generalized semi generalized closed sets in soft topological spaces are introduced and some basic properties are discussed.

(14) Soft topology on Function Spaces

Taha Yasin Ozturka and Sadi Bayramova (2014)

In this paper, they introduced the concept of the point wise topology of soft topological spaces and the properties of soft mappings spaces. Finally they investigated the relationships between some soft mappings spaces.

(15) On Induced fuzzy supra- topological spaces

Arafa A. Nasef, R. Mareay(2014)

In this paper, the notion of induced fuzzy topological space is defined with the notion of a lower semi continuous function. The concept of induced fuzzy supra-topological spaces and s -lower β -continuous functions are introduced and studied.

(16) Some Results on Supra neighbourhood Spaces

Young Key Kim(2014)

New operators in Supra Neighbourhood Spaces and the notion of S^*n -continuity and s -convergence of m -family are introduced. The basic properties, characterizations for the notions of new operators and S^*n -continuity in terms of s -convergence of m -family is investigated.

(17) Remarks on Generalized Topologies Induced by Supra- Neighbourhood Systems

Young Key Kim, Won Keun Min(2015)

Properties for the generalized topological sapce induced by supra neighbourhood system is investigated. The notion of S_{α} - continuity and $(sn)^*$ -continuity are introduced.

(18) On Soft Preopen Sets in Soft Topological Spaces

Gnanambal Ilango and Mrudula Ravindran (2013)

In this paper, they introduced a soft topology via soft preopen sets. Also they state and prove the condition for collection of soft preopen sets to be a soft topology.