

Summary and Conclusion

In this thesis, the concepts of bipolar fuzzy set, bipolar fuzzy graph have been introduced. The operations on bipolar spherical fuzzy graphs namely, symmetric difference and rejection have been discussed and developed results related to their degrees and total degrees explained with example. Neutrosophic cubic graph is extended to bipolar environment and combined with spherical fuzzy set to develop a theoretical study, bipolar spherical neutrosophic cubic graph. The significant properties of cartesian product, composition, m-join, n-join, m-union, n-union of a graph have been studied. Application of bipolar spherical neutrosophic graph in decision making problem is presented. An algorithm for construction of a minimum spanning tree of bipolar spherical fuzzy graph, bipolar spherical neutrosophic cubic graph have been developed. A vertex coloring for bipolar spherical neutrosophic graph, union, complement of bipolar spherical neutrosophic graph, bipolar strong spherical neutrosophic graph, bipolar complete spherical neutrosophic graph is defined and developed the chromatic number of spherical neutrosophic graph as a crisp number.

In the literature, there are many approaches to define an bipolar spherical fuzzy graphs by defining the condition to be satisfied by positive truth, positive indeterminacy, positive falsity, negative truth, negative indeterminacy, negative falsity values. This research work gives a firm mathematical definition of an bipolar spherical fuzzy graph. The future research directions based on this research work may be extended to a study of application of clustering on bipolar spherical fuzzy graph made on networks which identify the strength of connectedness between vertices of a spherical fuzzy graphs.