

Summary and Conclusion

In this thesis, the study of the notion λ_g^δ -closed sets is presented. This notion is properly placed between δ -closed sets and δg^* -closed sets. It is the nearest weaker form of δ -closed sets. λ_g^δ -closed sets are much stronger than many existing generalizations of δ -closed sets. The reverse implications of the dependence relationship, which do not hold good, are substantiated by counter examples. The characterizations of λ_g^δ -closed sets in semi-regular space, almost weakly Hausdorff space, $T_{3/4}$ -spaces are also derived.

Properties of various notions related to λ_g^δ -closed sets namely λ_g^δ -neighborhood, λ_g^δ -limit point, λ_g^δ -derived set, λ_g^δ -frontier, λ_g^δ -boundary, λ_g^δ -exterior and λ_g^δ -saturated set are studied. λ_g^δ -open sets are characterized using the concept of grill in topological spaces.

As an application of λ_g^δ -closed sets, five new spaces are constructed and their interrelations with existing spaces and among themselves are analyzed.

It is shown that the composition of two λ_g^δ -continuous functions is not preserved. But after changing the conditions suitably, the composition is preserved. Characteristics of λ_g^δ -irresoluteness and contra λ_g^δ -irresoluteness functions by inducing surjection, bijection on various types of continuity are presented.

Efficiency of λ_g^δ -closed sets is tested against that of regular closed and δ -closed sets in image processing. A glimpse of the study on fuzzy λ_g^δ -closed sets is presented with some interesting examples.

The collection of various open sets and closed sets for the topological spaces of three elements and four elements which are tabulated in Appendix I and Appendix II, are constructed to provide counter example wherever necessary.

The following problems for further study are suggested.

- λ_g^δ -locally closed sets and λ_g^δ -locally continuous functions can be developed in topological spaces.
- Fuzzy λ_g^δ -closed sets can be extended to the concepts of continuity, separation axioms, irresoluteness, homeomorphisms in fuzzy topological spaces.
- The concepts of λ_g^δ -closed sets can be defined for biminimal structures, nano topology, intuitionistic fuzzy topology, neutrosophic set theory and their applications may be obtained.
- The characterization of λ_g^δ -closed sets can be obtained in Baire space, Urysohn space and Alexandroff space.
- Filtering algorithms in image processing can be developed using λ_g^δ -closed sets.