

Introduction

In this work, we have discussed fuzzy relations and fuzzy graphs. Fuzzy relations and fuzzy graphs generalise the notions of relations and graphs.

The discussion consists of three chapters. The first chapter is essentially a collection of all concepts and results which are used in the ensuing chapters. This chapter can be divided into three parts. The first part contains the results of fuzzy sets and operations on them. The second consists of results on relations and the third on graphs.

In the second chapter, we discussed fuzzy relations. Most of the results mentioned here are available in the research papers. But the proofs given here are mostly our own. We have also introduced the concept of adjacency matrix of a fuzzy relation in this chapter and discussed its properties. The examples and counter examples given in the dissertation are our own.

In the third chapter, we have discussed fuzzy graphs. Most of the results mentioned here are available in research papers mentioned in the list of references. However, the proofs supplied in the dissertation are our own. In particular, the proofs of theorems 3.2.16, 3.2.17 and 3.3.11 are constructed by us. We have constructed many examples and counter examples to substantiate our claims. To do this,

we have introduced the concept of adjacency matrix of fuzzy relations and obtained some properties analogous to the adjacency matrix of crisp relations.

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