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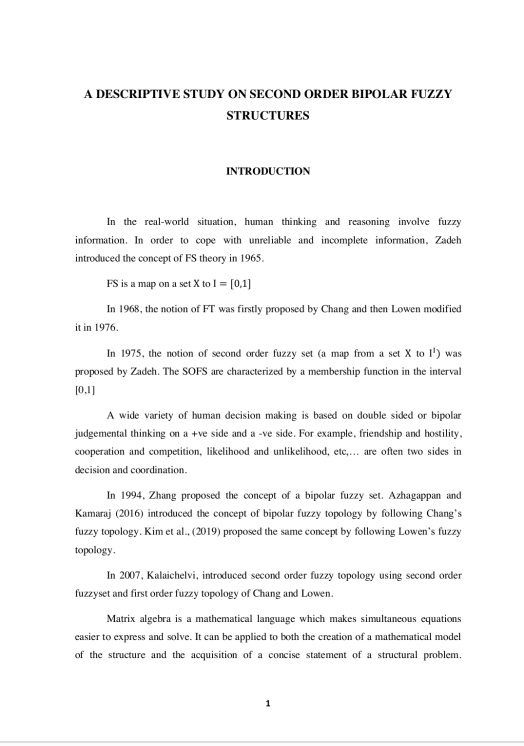

A DESCRIPTIVE STUDY ON SECOND ORDER BIPOLAR FUZZY STRUCTURES

INTRODUCTION

In the real-world situation, human thinking and reasoning involve fuzzy information. In order to cope with unreliable and incomplete information, Zadeh introduced the concept of FS theory in 1965.

FS is a map on a set X to I = [0,1]

In 1968, the notion of FT was firstly proposed by Chang and then Lowen modified it in 1976.

In 1975, the notion of second order fuzzy set (a map from a set X to I^I) was proposed by Zadeh. The SOFS are characterized by a membership function in the interval [0,1]

A wide variety of human decision making is based on double sided or bipolar judgemental thinking on a +ve side and a -ve side. For example, friendship and hostility, cooperation and competition, likelihood and unlikelihood, etc,… are often two sides in decision and coordination.

In 1994, Zhang proposed the concept of a bipolar fuzzy set. Azhagappan and Kamaraj (2016) introduced the concept of bipolar fuzzy topology by following Chang's fuzzy topology. Kim et al., (2019) proposed the same concept by following Lowen's fuzzy topology.

In 2007, Kalaichelvi, introduced second order fuzzy topology using second order fuzzyset and first order fuzzy topology of Chang and Lowen.

Matrix algebra is a mathematical language which makes simultaneous equations easier to express and solve. It can be applied to both the creation of a mathematical model of the structure and the acquisition of a concise statement of a structural problem.

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A DESCRIPTIVE STUDY ON SECOND ORDER BIPOLAR FUZZY STRUCTURES

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