

# Hybrid Framework Parameterization Reduction Combination in Soft Set

Mohammed Adam Taheir Mohammed<sup>1</sup>, Wan Maseri Wan Mohd<sup>1</sup>, Ruzaini Abdullah  
Arshah<sup>1</sup>, Mungad<sup>2</sup>, Edi Sutoyo<sup>2</sup> and Haruna Chiroma<sup>3,4</sup>

<sup>1</sup>Faculty of Computer System & Software Engineering  
Universiti Malaysia Pahang  
Lebuhraya Tun Razak, Kuantan, Pahang, Malaysia

<sup>2</sup>Department of Information System

<sup>3</sup>Department of Artificial Intelligence  
University of Malaya

50603 Pantai Valley, Kuala Lumpur, Malaysia

<sup>4</sup>Department of Computer Science

Federal College of Education (Technical), Gombe, Nigeria

mohammed\_taher30@yahoo.com, {maseri, ruzaini}@ump.edu.my,  
hchiroma@acm.org, {mungad, edisutoyo}@um.edu.my

**Abstract.** Voluminous data are available in soft sets, which makes it difficult to recognize the soft set decisions of the data. The large increase in the volume of these soft sets has made it necessary to enlarge the size of the storage media to store the data. Consequently, several researchers have proposed soft set reduction of the data. This paper proposes uncertain soft set by hybridizing two soft set reduction techniques producing a significant result without affecting the decisive characteristics of the data. This proposed method utilizes advanced techniques to govern knowledge with proper reduction of related resources that can assist the decision making process.

**Keywords:** Object reductions; Parameters reductions; Soft Set Reduction.

## 1. Introduction

Handling of uncertain data using mathematical principles, such as soft set theory [1] referred to as fuzzy sets (binary, basic, elementary) neighborhood systems, have recently attracted a lot of studies by researchers. As the standard soft set may be redefined as the classification of objects in two distinct classes, thus soft set can deal with a Boolean-valued Information System (IS). Molodtsov [2], argued that soft set is free from the inadequacy of parameterization tools such as fuzzy set, probability and interval mathematics.

An attribute reduct in a decision table involves a subset of conditional attributes that are sufficient to define the decision attributes but more than one reduct may exist in each decision table. The intersection of all the possible reducts is called the core, which represents the most important information in the decision table. However, finding all the attribute reducts in a decision table is NP-hard [4], whereas the full power of a rough set methodology can only be effective on clean and small sets of dataset.