

# Soft Sets and Hybrid Soft Sets: A Systematic Review of Methodologies, Applications, and Advancements

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## ABSTRACT

This systematic review critically examines the foundational concepts, methodologies, and applications of soft and hybrid soft sets, two innovative mathematical frameworks. Initially introduced as a generalization of classical sets, soft sets encapsulate uncertainty and vagueness in decision-making processes. Hybrid soft sets, an extension of soft sets, combine multiple mathematical structures to enhance their versatility. This review synthesizes existing literature, providing an in-depth analysis of the theoretical underpinnings, computational approaches, and diverse applications of soft sets and hybrid soft sets. The exploration encompasses their role in solving real-world problems, implications for decision support systems, and potential avenues for future research. By consolidating and evaluating the current state of knowledge, this review contributes to a deeper understanding of these emerging mathematical models.

**Keywords:** Soft Sets; Hybrid Soft Sets; Fuzzy Sets

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