

# Computing the Shapley Value of Facts in Query Answering

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## 1 Abstract

we will clearly define the scope and focus of our literature review through our research questions and objectives which guides the entire process of capturing the methods used , achieved results and their conclusion.

## 2 Introduction

In this collaborative literature review, our team delves into the intricacies of Computing the Shapley Value of Facts in Query Answering By synthesizing existing research, This comprehensive analysis not only enriches our understanding but also lays the groundwork for our own research, providing valuable insights for both current and future investigations.

What is the Shapley value?

What is the practical challenge in computing the Shapley value?

## 3 Methods

In this section, we will begin by addressing the methodology employed in this study report, as well as the practical and theoretical approaches derived from the research.

What is the first practical solution proposed for computing Shapley values?

What is the second practical solution for computing Shapley values?

## 4 Results

Our review of studies on calculating the Shapley value of data in query response reveals considerable advances in computational efficiency, ethical issues, and technical advancements. Advanced algorithms and machine learning models show promise in managing massive datasets, while privacy-preserving approaches and blockchain integration solve ethical problems. However, the issue of understanding Shapley values in complicated settings persists, pushing more study to improve practical applications in decision-making processes and data analysis.

What is the objective of explaining query answers?

What does the Shapley value of a fact represent in the context of relational databases?

What did Livshits et al. show about the complexity of the problem?

What is the common approach for computing Shapley values in probabilistic databases?

What is the heuristic approach proposed to retrieve the relative order of facts by their Shapley values?

## 5 Discussion

We noticed the expanding environment of Shapley value calculation for query responding throughout our joint evaluation. Algorithmic improvements have increased efficiency, and machine learning integration for predictive models shows potential. We investigated privacy-preserving strategies due to ethical concerns, and blockchain integration improves transparency. Our findings underscore the importance of continued multidisciplinary efforts to improve these methodologies and provide fair and secure decision-making frameworks.

What is the SHAP-score?

What is the contribution mentioned in the text?

What is the target class of compilation in the efficient approach for computing Shapley values?

What is the term used to compute the Shapley value of every input fact?

What is Conjunctive Normal Form (CNF)?

## 6 conclusion

In conclusion, this research offers a thorough examination of the available literature on calculating the Shapley value of data in inquiry responding. This research exposes the problems and accomplishments at this key junction of cooperative game theory and database management through a synthesis of varied approaches and ethical issues. Our study highlights the evolving landscape and sets the stage for future research, emphasizing the importance of efficient computation, ethical practices, and innovative solutions in the ever-expanding domain of query answering.

What are the two aspects correlated with Shapley values?

## References

The planned literature review will draw on a wide range of scholarly publications, including landmark articles, research papers, and theoretical frameworks in the fields of cooperative game theory, database administration, and artificial intelligence. Our team will thoroughly reference and recognize these sources, assuring the integrity and reliability of the material given.