

A Systematic Literature Review of Semantic Web Technologies

Your Name
Your Institution

Abstract

This paper presents a Systematic Literature Review (SLR) on Semantic Web technologies. The review includes research questions, search strategies, inclusion and exclusion criteria, quality assessment, and synthesis of selected studies. The findings highlight trends, challenges, and future opportunities in Semantic Web research.

Keywords: Semantic Web, Ontology, Linked Data, Knowledge Graph, SLR.

1 Introduction

Explain background, motivation, research gaps, and importance of Semantic Web research.

1.1 Research Questions

- **RQ1:** What Semantic Web technologies are most commonly used?
- **RQ2:** In which domains are Semantic Web technologies applied?
- **RQ3:** What challenges and limitations are reported?
- **RQ4:** What are the research trends over time?

2 Background

Provide theoretical overview:

- RDF, OWL, SPARQL
- Ontology engineering
- Knowledge Graphs
- Reasoning techniques

3 Methodology

This SLR follows PRISMA guidelines.

3.1 Search Strategy

Databases used:

- IEEE Xplore
- ACM Digital Library
- Scopus
- ScienceDirect

Example search string:

("semantic web" OR "ontology" OR "linked data" OR "knowledge graph")
AND ("application" OR "implementation" OR "case study")

3.2 Inclusion Criteria (IC)

- IC1: Focus on Semantic Web technologies
- IC2: Published between 2014–2024
- IC3: Peer-reviewed articles

3.3 Exclusion Criteria (EC)

- EC1: Duplicate studies
- EC2: Non-English publications
- EC3: No access to full text

3.4 Quality Assessment

Each study is evaluated using the following criteria (score 0–1):

- Q1: Clear research goals
- Q2: Sound methodology
- Q3: Sufficient evaluation

3.5 Study Selection (PRISMA)

Insert your PRISMA diagram:

Identified → Screened → Eligible → Included

Add your figure:

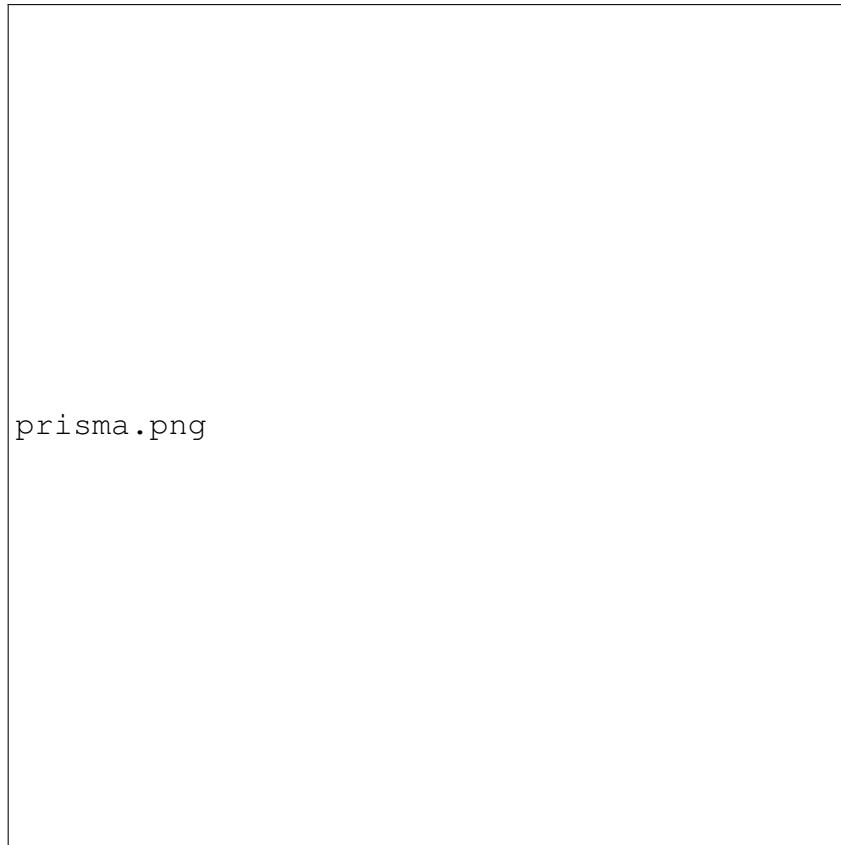


Figure 1: PRISMA Flow Diagram

4 Results

4.1 Overview of Selected Studies

Summary of articles:

- Total articles identified: XX
- Final selected studies: XX

4.2 Trends by Year

Insert chart or narrative here.

4.3 Technologies Used (RQ1)

Discuss usage of RDF, OWL, SPARQL, Knowledge Graphs, etc.

4.4 Applications by Domain (RQ2)

Health, IoT, smart cities, education, etc.

4.5 Challenges (RQ3)

Common challenges:

- Scalability
- Data integration
- Ontology alignment

5 Data Extraction Table

| Author | Year | Domain | Technology Used | Key Findings |
|----------|------|------------|------------------|---|
| Author A | 2020 | Healthcare | RDF, OWL | Ontology improved patient data integration. |
| Author B | 2022 | IoT | Knowledge Graphs | Reasoning improved semantic interoperability. |

6 Discussion

Provide deep analysis and compare studies.

7 Research Gaps

Highlight gaps such as:

- Lack of large-scale evaluations
- Missing benchmark datasets
- Limited integration with machine learning

8 Future Work

Recommendations for further research.

9 Conclusion

Summarize findings, contributions, and significance.

10 References

Use BibTeX or manual references here.