Incremental Reasoning on RDFS
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Evolving Data

Inference time (in ms.)

<table>
<thead>
<tr>
<th></th>
<th>Explicit Triples</th>
<th>Implicit Triples</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDFS</td>
<td>10 000</td>
<td>20 000</td>
</tr>
<tr>
<td>Slider</td>
<td>71.47%</td>
<td>13 different ontologies</td>
</tr>
<tr>
<td>OWLIM</td>
<td>36.08%</td>
<td>5 generated with BSBM [3]</td>
</tr>
<tr>
<td>ρdf</td>
<td>106.86%</td>
<td>2 from real-word datasets</td>
</tr>
<tr>
<td></td>
<td>71.47% improvement for ρdf</td>
<td>6 subClassOf ontologies</td>
</tr>
</tbody>
</table>

**REFERENCES**


**ARCHITECTURAL OVERVIEW**

**INPUT MANAGER**

- **Buffers**
- **Thread Pool**
- **Distributors**

**Evolving Data**

**TRIPLE STORE**

Explicit Triples
Implicit Triples

**MAIN FEATURES**

- **Parallel and Scalable Execution**: Each inference rule is mapped to an independent module, receiving intended triples and later distributing them to other modules for further processing.

- **Duplicates Limitation**: Vertical partitioning [1] and multiple indexing limit the production of duplicates and avoid unnecessary computation.

- **Data Stream Support**: Slider can handle both dynamic triple streams and static triples sets by employing parallel architecture.

- **Fragment’s Customization**: Slider natively support both RDFS [4] and ρdf [5] fragments, and can be extended to any other fragments.

**EXPERIMENTATIONS**

- **Comparison with OWLIM-SE [2]**
- **Inference on both RDFS and ρdf**
- **13 different ontologies**
  - 5 generated with BSBM [3]
  - 2 from real-word datasets
  - 6 subClassOf ontologies
- **106.86% improvement for ρdf**
- **36.08% improvement for RDFS**
- **71.47% improvement in average**

**FUTURE WORK**

- Implementation of more complex inference rules, to provide reasoning over more complex fragments.
- Just-in-time optimisations of the rules execution’s scheduling.
- Use of previous runs informations to adapt and be more reactive.

**SOURCE CODE AND DEMO**

The source code is available here: https://github.com/juleschevalier/slider

A demo can be found here: http://demo-satin.telecom-st-etienne.fr/slider/

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