

Stream Reasoning Tutorial 2015

Last Updated Sunday, 28 June 2015

This is the official page of the 2 day course on Stream Reasoning I gave at Poznan University of Economics. Friday, 26 June 2015 9:00 - 10:30

- Stream Reasoning: mastering the velocity and variety dimension of Big Data at once [pdf]
- It's a streaming world
- Requirements

- State-of-the-art solutions

- Stream Reasoning research questions
- Running Example

- Brief recap of Semantic Web technologies [pdf]

- RDF data model
- OWL basics 10:45 - 12.15
- Brief recap of Semantic Web technologies Cont.

- SPARQL query language
- ontology base query answering
- An overview on RDF Stream Processing [pdf]
- Adding the streaming dimension to the running example
- RDF Stream models

- Continuous SPARQL query models

- A comparison of existing engines 13.15 - 15.45
- Adding reasoning to RDF Stream Processing (the basics) [pdf]
- Forms of reasoning for Query Answering (Q/A)

- Naïve forms of stream reasoning for Q/A
- Delete & Rederive: a not so naïve form of stream reasoning for Q/A
- Putting it all together (the C-SPARQL way) [pdf]
- the C-SPARQL Language
- the C-SPARQL Engine

- hands-on session [pdf][zip] Saturday, 27 June 2015

9:00 - 10:30

- Processing Virtual RDF Streams with Morph Stream Engine [pdf]

- on the need to process heterogeneous data stream at the source
- the Morph Stream Engine
- R2RML: RDB to RDF mapping language
- Adding reasoning to this picture
- Hands-on session [link][pdf]

10:45 - 12.15

- IMaRS: Optimize deductive reasoning for reactive answers [pdf]
- Problem statement

- State-of-the-art solutions

- Proposed solution
- See it in action on the running example

- Experimental results
- Other Stream Reasoning approaches similar to IMaRS ([pdf] not covered in details)

- Sparkwave
- DynamiTE: Parallel Materialization of Dynamic RDF Data
- RDF Stream Reasoning with GPUs
- Ontology Stream Reasoning with Truth Maintenance Systems
- Types of Stream Reasoning different from IMaRS ([pdf] not covered in details)

- ETALIS and EP-SPARQL
- Stream Reasoning with ASP
- Stream Reasoning with Probabilistic ASP
- STARQL12.30 - 13.15
- C-SPARQL related findings, community achievements, and open challenges [pdf]

- Revisiting the stream reasoning research question
- RDF streams
- Continuous Extensions of SPARQL

- Relation with DSMSs and CEPs
- Reasoning on RDF streams
- Dealing with incomplete & noisy data
- Engineering Stream Reasoning Applications

- What's next?