ACE View
an ontology and rule editor based on controlled English

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Introduction

ACE View is a novel ontology and rule editor that simplifies the exploration and editing of expressive and syntactically complex OWL 2 ontologies and SWRL rule sets by basing the user interface on Attempto Controlled English (ACE). This makes ACE View radically different from current OWL and SWRL editors which use formal logic syntaxes and general purpose graphical user interface widgets (trees, checkboxes, etc.), and which are often seen as too complicated and confusing for domain experts with no background in formal methods. ACE View integrates two mappings, ACE → OWL/SWRL and OWL → ACE, and is implemented as a plug-in for Protégé 4.

Motivation

The OWL 2 specification describes several serialization syntaxes for OWL ontologies. Some of these syntaxes are oriented towards machines and are thus inherently difficult to read and write for humans. Others have been designed for logicians and programmers, but lack the features that would bring OWL closer to domain experts who are often not well-trained in formal methods. Some of the problems that users encounter when working with OWL ontologies are purely semantic (e.g., caused by misunderstanding the open world reasoning and the unique name assumption). Many problems, however, are rooted in the nature of current OWL syntaxes.

Some knowledge bases also require a rule component, often expressed in SWRL. The proposed SWRL syntax, however, is completely different from the OWL syntaxes. Query languages introduce yet another set of syntaxes.

ACE vs OWL/SWRL. Which is more readable?

One possible solution is to work with knowledge bases via a controlled natural language like ACE. ACE is a formal logic that is syntactically a fragment of English, thus making the reading and writing of logic formulas more user-friendly. Compare:

<table>
<thead>
<tr>
<th>ACE</th>
<th>OWL, SWRL, DL-Query</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every employee that does not own a car owns a bike.</td>
<td>employee(John) ⊓ ¬exists(c) ownsCar(c, John) ⊑ exists(b) ownsBike(b, John)</td>
</tr>
<tr>
<td>Every man that owns a car likes the car.</td>
<td>man(?x) ∧ owns(?x, ?y) ∧ car(?y) → like(?x, ?y)</td>
</tr>
<tr>
<td>Which car does John own?</td>
<td>car ⊓ ∃own − {John}</td>
</tr>
</tbody>
</table>

ACE views

ACE View provides a set of views that present the knowledge base as a set of ACE snippets. Each snippet is a sequence of one or more ACE sentences and corresponds to an OWL or SWRL axiom, or a DL-Query. The user can add, modify and delete snippets. Snippets can also be generated by interacting with standard Protégé views (e.g., the sub class hierarchy tree). Furthermore, interaction with a reasoner (question answering, entailment generation and explanation) is also based on ACE.

Download ACE View at http://attempto.ifi.uzh.ch/aceview/
Learn the ACE language at http://attempto.ifi.uzh.ch/