AceWiki

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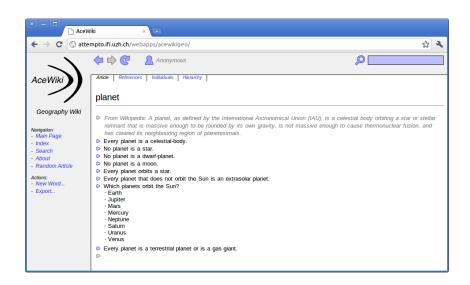
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Grammatical Framework Summer School 23 August 2011 Barcelona



- AceWiki is a semantic wiki
- Articles are written in Attempto Controlled English (ACE)
- These sentences are internally translated into the Semantic Web language OWL
- An OWL reasoner is built in to answer questions and detect inconsistencies
- Special editor for writing ACE statements
- Stable implementation, but some important features are still missing

Screenshot



Writability Problem

Writing CNL statements is much harder than reading them:

- For writing statements in a CNL, users have to know the restrictions of the language
- The restrictions of sophisticated CNLs like ACE are quite complex
- Users need support for writing CNL statements!

There are several approaches:

- Error messages
- Conceptual authoring: users do not directly change the text, but trigger modification actions
- Predictive editors

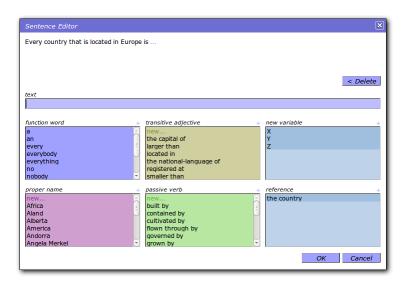
Predictive Editors: Challenges

A predictive editor shows all possible continuations of a partial text.

Challenges:

- Potentially high number of possible words
- Sentence creation should be quick (not much more than one mouse click per word)
- Novice versus experienced users
- Creation of new words
- Suitable grammar notation and parser

Predictive Editor



Articles, Words and Statements

Articles ⇔ **Words.** Every word has an article.

- Proper names (Individuals)
- Nouns (Concepts)
- Of-constructs (Relations)
- Transitive Verbs (Relations)
- Transitive Adjectives (Relations)

Statements. Every article consist of a list of statements.

- Declarative ACE Sentences (Assertions)
 - considered for reasoning: blue triangle
 - too complex for reasoning: red triangle
- ACE Questions (Queries)
- Comments (Informal Notes)

Consistency Checking

Consistency of the knowledge base is very important, because it is a prerequisite for all other reasoning tasks.

AceWiki ensures consistency by checking every new statement:

- Malta is a country.
- Malta is an island.
- Maltese is an official language of Malta.
- Maltese is a semitic language.
- English is an official language of Malta.
- Malta is a member of the European Union.
- No semitic language is an official language of a country that is a part of the European Union.

Question Answering

AceWiki supports simple wh-questions with exactly one wh-word:

- Which countries are a member of the European Union?
 - France
 - -Germany
 - Malta
 - -Slovakia
 - -Spain
- lacktriangle Which country that is a part of Europe is not a member of the European Union?
 - -Switzerland
- Which languages are an official language of a country that is a member of the European Union?
 - English - French
 - French
 - -German
 - Maltese
 - -Spanish

Evaluation

Two small usability experiments with earlier versions of AceWiki:

- Altogether 26 untrained participants
- Task: Collaborative creation of a knowledge base

Results:

- 78%-81% of the sentences were correct and sensible
- 61%-70% of them were complex (containing negation, implication, disjunction or number restriction)
- Creation of a correct sentence every 5-6 minutes
- Definition of a new word every 5–7 minutes
- ightarrow Even untrained users can effectively use AceWiki

Expressiveness versus Efficiency

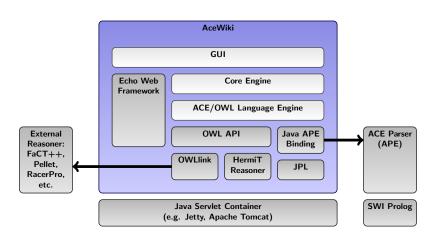
Trade-off: Expressiveness/Complexity ⇔ Decidability/Efficiency

- First-order logic: expressive, undecidable, very inefficient
- Description Logics, OWL: less expressive, decidable, inefficient
- OWL Profiles (RL, EL, QL): even less expressive, decidable, efficient

AceWiki can use full OWL or an OWL profile for reasoning. Sentences that are more complex get a red triangle and are ignored for reasoning:

Every trip that starts at X and that ends at X is a round-trip.

Architecture



Future

Within the MOLTO project, the AceWiki approach should be extended to a multilingual semantic wiki.

Users should be able to access (view and edit) the same knowledge base in different languages in a fully synchronized way.

That's it from my side

Now, Kaarel will tell you more about what is going on under the hood of AceWiki